DOCUMENT RESUME

ED 384 756 CE 069 405

AUTHOR	Lewis, Theodore; And Others
TITLE	Workplace Literacy--Is There a Role for Vocational Institutions?
INSTITUTION	National Center for Research in Vocational Education, Berkeley, CA.
SPONS AGENCY	Office of Vocational and Adult Education (ED), Washington, DC.
PUB DATE	Jul 95
CONTRACT	V051A30003-95A; V051A30004-95A
NOTE	196p.
AVAILABLE FROM	National Center for Research in Vocational Education, Materials Distribution Service, 46 Horrabin Hall, Western Illinois University, Macomb, IL 61455 (order no. MDS-880: $10.50).
PUB TYPE	Reports - Research/Technical (143)
EDRS PRICE	MF01/PC08 Plus Postage.
DESCRIPTORS	Adult Basic Education; *Adult Literacy; *Case Studies; *Literacy Education; On the Job Training; *Program Effectiveness; School Business Relationship; *School Role; Vocational Education; *Vocational Schools
IDENTIFIERS	*Workplace Literacy

ABSTRACT

A project examined five case studies of workplace literacy initiatives. The research sought to understand better what happens within workplace literacy programs--what are their premises and claims, their curricular stances, and their approach to teaching and learning--with the intent of resolving the basic question of whether vocational institutions can claim uniqueness or a comparative advantage over other providers in the workplace literacy enterprise. Case studies were conducted at the following sites: (1) a hospital service workers' project; (2) a high tech manufacturing company's basic skills project; (3) basic skills program for nonsalaried bank workers; (4) English as a second language for immigrant service workers in a hotel; and (5) a nontraditional vocational institution focused on workplace literacy. Based on interviews, document examination, on-site observation, and a review of literature, the research supported hypotheses that vocational institutions would have a comparative advantage in workplace literacy programs because of the following: (1) they have a long tradition of collaborating with industry to derive workplace-based curricula; (2) they have a history of catering to diverse and marginalized populations among whom could be found enclaves of illiteracy; (3) they provide both initial and upgraded training geared to lifelong learning; and (4) they offer basic skills in the functional context of technical skills. (The report includes 111 references and 3 appendices: overview of the hospital reading on-the-job course, practicing menu reading, and 4 tables.) (KC)

ED 384 756

NCRVE

National Center for Research in
Vocational Education

University of California, Berkeley

WORKPLACE LITERACY—
IS THERE A ROLE FOR
VOCATIONAL INSTITUTIONS?

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)

☑ This document has been reproduced as received from the person or organization originating it

☐ Minor changes have been made to improve reproduction quality

- Points of view or opinions stated in this document do not necessarily represent official OERI position or policy

BEST COPY AVAILABLE

Supported by
the Office of Vocational and Adult Education,
U.S. Department of Education

CE 069 405

This publication is available from the:

National Center for Research in Vocational Education
Materials Distribution Service
Western Illinois University
46 Horrabin Hall
Macomb, IL 61455

800-637-7652 (Toll Free)

WORKPLACE LITERACY—
IS THERE A ROLE FOR VOCATIONAL INSTITUTIONS?

Theodore Lewis
University of Minnesota

Mildred Griggs
University of Illinois

assisted by
Stephan Flister
Amadou Konare
University of Minnesota

Jason M. Githeko
Norah C. Chemengen
University of Illinois

National Center for Research in Vocational Education
Graduate School of Education
University of California at Berkeley
2150 Shattuck Avenue, Suite 1250
Berkeley, CA 94704

Supported by
The Office of Vocational and Adult Education,
U.S. Department of Education

July, 1995 **MDS-880**

FUNDING INFORMATION

Project Title:	National Center for Research in Vocational Education
Grant Number:	V051A30003-95A/V051A30004-95A
Act under which Funds Administered:	Carl D. Perkins Vocational Education Act P.L. 98-524
Source of Grant:	Office of Vocational and Adult Education U.S. Department of Education Washington, DC 20202
Grantee:	The Regents of the University of California c/o National Center for Research in Vocational Education 2150 Shattuck Avenue, Suite 1250 Berkeley, CA 94704
Director:	David Stern
Percent of Total Grant Financed by Federal Money:	100%
Dollar Amount of Federal Funds for Grant:	$6,000,000
Disclaimer:	This publication was prepared pursuant to a grant with the Office of Vocational and Adult Education, U.S. Department of Education. Grantees undertaking such projects under government sponsorship are encouraged to express freely their judgement in professional and technical matters. Points of view or opinions do not, therefore, necessarily represent official U.S. Department of Education position or policy.
Discrimination:	Title VI of the Civil Rights Act of 1964 states: "No person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance." Title IX of the Education Amendments of 1972 states: "No person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving federal financial assistance." Therefore, the National Center for Research in Vocational Education project, like every program or activity receiving financial assistance from the U.S. Department of Education, must be operated in compliance with these laws.

EXECUTIVE SUMMARY

This report examines five case studies of workplace literacy initiatives. Except for the Twin Cities Opportunities Industrialization Center (TCOIC), which is the actual name of that institution, pseudonyms are used throughout when referring to people and institutions. Broadly defined, *workplace literacy* in this study refers to the several kinds of capabilities and dispositions (such as the three Rs, learning how to learn, teamwork, problem-solving skills, and communication skills) that are now thought to comprise the necessary possessions one needs in order to function competently in today's workplace.

In the first case, Redwood Technical College, a two-year postsecondary vocational institution, collaborated with the Union Educational Bureau to deliver a basic skills program to housekeepers and food service workers at four hospitals under the terms of a federal grant. In the second case, North Oaks Technical College, also a two-year postsecondary vocational institution, executed a workplace literacy project on contract for a high-tech manufacturing company. In the third case, a private provider, the Workplace Education Center (WEC), delivered a basic skills program to nonsalaried workers at the branch of a large bank. In the fourth case, this same provider delivered an English as a Second Language (ESL) program to immigrant service workers at the branch of a large chain of hotels. The fifth and final case describes the approach of the TCOIC, a nontraditional vocational institution that focuses on marginalized populations, and which places heavy emphasis on basic skills even as it offers technical skills.

The problem was to understand better what transpires within workplace literacy programs—what are their premises and claims, their curricular stances, and their approach to teaching and learning—with the intent of resolving the basic question of whether vocational institutions can claim uniqueness or a comparative advantage over other providers in the workplace literacy enterprise.

Case methodology allowed detailed examination of the five initiatives. The inquiry took the form of formal and informal interviews, document examination, and on-site observation.

Based on a review of literature, a set of premises or hypotheses was set forth to provide a framework against which each case could be interrogated. These premises/hypotheses were that vocational education institutions would have a comparative advantage in the extent to which they (1) had long traditions of collaborating with industry to derive workplace-based curricula, (2) catered to diverse and marginalized populations among whom could be found enclaves of illiteracy, (3) provided both initial and upgraded training geared to lifelong learning, and (4) offered basic skills in the functional context of technical skills. These premises/hypotheses were loosely set as criteria that helped to resolve the question of uniqueness and comparative advantage.

Taken together, the cases unearthed some critical features which, if present, seemed to strengthen the case for a vocational institution claiming uniqueness or comparative advantage over other providers in the workplace literacy enterprise. Among these features were the following:

1. a tradition of working collaboratively with industry to determine their training needs and deriving curriculum therefrom
2. a customized training focus
3. distance education capability that would allow the delivery of programming directly to workplaces from campus sites
4. capability to deal with racial and ethnic minorities
5. capability of dealing with immigrant non-English speaking populations
6. Adult Basic Education (ABE) capability, including ability to diagnose basic skill deficiencies and to distinguish between functional needs and generic needs
7. a tradition of integrating basic skills with technical skills training (i.e., of teaching basic skills in the functional context of technical skills)
8. flexible scheduling to allow for self-paced learning, and a willingness to give students the time they need to complete programs
9. ability to work collaboratively with labor representatives

A primary conclusion of the study was that to lay claim to uniqueness or to comparative advantage, a requirement was that vocational institutions should play to their strengths, which include a tradition of hands-on learning, and keeping basic skills and theory tightly connected with technical skills, either in applied instruction (e.g., welding math, business English) or in physical proximity to allow literacy classes to act as a vocational hook.

ACKNOWLEDGMENTS

We thank the cooperating staffs and workers of the two technical colleges, the union, the hospitals, the high-tech manufacturing company, the private literacy provider, the bank, and the hotel that are anonymously represented here for their generosity. We thank the staff of the Twin Cities Opportunities Industrialization Center (TCOIC) for allowing us the full run of their school. Rosemarie Park, project consultant, is thanked for her insights and suggestions. We thank Jerome Moss for reading a draft of the report and offering insightful suggestions.

TABLE OF CONTENTS

Executive Summary i

Acknowledgments v

Introduction 1

Literature Review/Conceptual Framework 3

- The Global Economy and Economic Competitiveness as Context 3
- The Changing Nature of the World of Work and New Skill Requirements 7
- What Works in Literacy Programs 11
- Evaluating Workplace Literacy Programs 12
- Summary/Reflections 17
- Premises/Hypotheses 18

Methods and Procedures 18

- Selection of Initiatives 19
- Case 1 21
- Case 2 21
- Case 3 21
- Case 4 22
- Case 5 22

Case 1—A Hospital Services Workers Project (Skills for Tomorrow) 23

- Background 23
- What Qualified Redwood Technical College To Be a Workplace Literacy Provider? 29
- Basic Skills 33
- Curricular Philosophy 34
- Curricular Approach 39
- Literacy Beyond the Workplace 51
- Dealing with Workplace Basics 52
- Instructional Strategy 53
- Summary/Reflections 62

Case 2—A High-Tech Manufacturing Company's Basic Skills Project (Skills 2000) 65

- Background 65
- Purpose 67
- Method 67
- Curriculum Development 74
- Reading Instruction 77

Underlying Philosophy of Literacy 79
Residual Effect of Experience in Workplace Literacy 80
Evaluation of the Project 80
Summary/Reflections 84
Workplace Education Center—Notes on a Private Provider (Preamble to Cases 3 and 4) 86
WEC as a Business Enterprise 87
WEC's Instructional Program Planning Policy 88
Funding 91
WEC's Curricular and Instructional Philosophy and Approach 92
Support Services 94
WEC Staff Backgrounds 94
Summary/Reflections 94
Case 3—A Banking Basic Skills Project (NEET) 96
The Problem and the Context 96
Needs Assessments 98
Curriculum Model 99
Instruction 100
Characteristics of Participants 102
Program Evaluation 102
Trainer's Background and Disposition 103
Summary/Reflections 103
Case 4—A Hotel ESL Project for Immigrant Service Workers 105
The Problem 105
Solution to the Literacy Problem 106
Participant Roles 108
The Curriculum 110
Instructional Approach 112
Performance Assessment 116
The Participants 117
Support Services 119
Program Assessment 119
Summary/Reflections 120
Case 5—A Workplace Literacy-Focused, Community-Based, Vocational Institution 121
Brief History 121
Services 127

The Curriculum 132
The Core Curriculum 132
Technical Offerings 136
Instruction 138
Giving Them Time 139
Functional Context 139
Voices of Students 143
Summary/Reflections 145
Reflections, Conclusions, and Recommendations 147
Case 1—Hospital Project 147
Case 2—A High-Tech Company 149
Cases 3 and 4—A Private Provider 150
Case 5—A Nontraditional Vocational Institution 151
Summary/Reflections 152
Reflection on Workplace Literacy 153
Bibliography 157

Appendix A

Appendix B

Appendix C

INTRODUCTION

This report describes five case studies of workplace literacy initiatives. They include (1) a study of the role of a two-year postsecondary technical college as a partner and provider in a federally funded workplace literacy project (other partners being a union and four hospitals); (2) a study of the role of a two-year postsecondary technical college on contract with a high-tech manufacturing company to deliver a program of basic skills for a cross section of its workers; (3) a study of a basic skills program for hourly paid employees at a large urban bank; (4) a study of a hotel services' English as a Second Language (ESL) program that was designed to improve the basic skills of immigrant employees; and (5) a study of the operations of an accredited alternative vocational institution that specializes in serving the poor and the educationally and socially marginal, along with remedial and workplace literacy programming. In all cases, the researchers spent extensive periods of time observing and collecting data via formal and informal interviews of individuals and small groups. In addition, artifacts at the sites were examined.

The *problem* of the study was that what is known about workplace literacy is still sparse. There was a need to try to answer the basic question, "What do workplace literacy programs look like, and what can we learn from them that would be instructive for vocational education policy and practice?" The purpose was to try to resolve the defining question, "Can vocational education institutions lay claim to a comparative advantage over other providers in the workplace literacy enterprise?" From this basic question sprung several related questions that helped to give form to the logic of the inquiry. These included the following:

- If a vocational institution focuses on workplace literacy, how would its curricular and instructional approaches be different from traditional programming?
- What is the substance of the collaboration of vocational institutions and partners (such as unions and corporate entities) when they team to solve a workplace literacy problem?
- Which curriculum development procedures seem to work best?

- What recurring implementation problems do vocational education institutions experience when they collaborate on workplace literacy problems?
- What kinds of teaching and learning occur in such programs?
- What are some exemplary practices that are worth emulating as vocational institutions become involved in workplace literacy problems?

Although workplace literacy programs, being education for work, are clearly in the realm of vocational education, they are not necessarily perceived as such even within the field. Because they focus not on technical skills, but largely on decontextualized basic skills that can conceivably be taught away from traditional vocational education laboratory environments, they have become the province of an array of providers (e.g., public schools, community colleges, and unions), all of which are legitimate claimants to a niche in the workplace literacy enterprise. A central premise underlying the study, then, was that vocational education institutions will increasingly be called upon to assume leadership and collaborative roles in fashioning and executing workplace literacy initiatives. Many are currently involved in such roles as partners in the National Workplace Literacy program. These new roles will compel institutions to reconsider and, perhaps, reconceptualize their approaches to curriculum, and to program planning and delivery. To respond competently to new demands engendered by the problem of workplace literacy requires a knowledge-base upon which to draw—a knowledge-base which, in the context of vocational education research, is still in its nascent stages. The more prominent studies (e.g., Gowen, 1992; Hull, 1991, 1992, 1993; Kalman & Fraser, 1992; Schultz, 1992) have alerted us to ideological and other contentions that attend workplace literacy programs—contentions such as the functional/critical literacy debate, along with the relationship between socioeconomic status (SES), ethnicity, and basic skills. Insights from these studies have helped fashion the conceptual framework that is to be detailed next. However, studies to date have not addressed the question of whether vocational education institutions can lay claim to a unique niche, or to a comparative advantage, in the workplace literacy enterprise—a status that would set it apart from other entities as a provider of workplace literacy programming.

To set the stage for the inquiry, it was necessary to fashion a conceptual framework (discussed earlier) based upon a review of literature. The purpose of this framework was to help define the parameters that would guide our probe, and to highlight issues and contentions about which we needed to be aware as the work progressed and as we tried to give meaning to our observations. From a practical standpoint, the review served the functional purpose of helping to set forth criteria for the selection of cases and guidelines for the framing of questions for interview protocols. An outline of the framework follows.

LITERATURE REVIEW/CONCEPTUAL FRAMEWORK

This literature review provides the conceptual framework that has guided the inquiry. Its basic thrust is to locate the problem of workplace literacy in the wider discourse of education for economic competitiveness in the new global economy. Changes in the nature of work, concomitant changes in the kinds of capabilities that workers are now expected to bring to the workplace, and the resulting need for education and training institutions to rethink their curricular and instructional premises and strategies are discussed. What the role and the response of vocational institutions in particular ought to be in this quest to upgrade the literacy skills of workers is examined. Because adult literacy is by nature a politically sensitive construct, a purpose of the review was to help uncover issues and variables with which one must contend in trying to gain a deep, balanced understanding of the problem in the context of workplaces. One such issue is the problem of defining what is meant by workplace literacy. Another is the question as to whether jobs are becoming more or less complex. Yet another is the correlation between societal levels of literacy and SES.

To come to terms with these issues, and also to suggest anchoring points for the inquiry, the review examines (1) the global economy and economic competitiveness as context for worker education and training, (2) the changing nature of work and new skill requirements of workers, (3) problems in defining workplace literacy, (4) what works in workplace literacy programs, (5) evaluating existing workplace literacy programs, and (6) vocational education and the changing workplace.

The Global Economy and Economic Competitiveness as Context

Education and training systems have emerged as key variables in the quest by the industrialized countries to gain a competitive edge in.the new global economy. A recent monograph sponsored by the Organization for Economic Cooperation and Development (OECD) (Benton & Noyelle, 1992) speaks of the changing conception of literacy, from the goal of civic participation to that of economic performance. The study points out that this change "responds to important shifts in the nature of the world economy and related changes in the organization and sectoral distribution of jobs" (p. 13). Regarding the more specific question of the correlation of skills and economic performance in the new global economy, the study sets forth the following:

> Most observers of the economy would agree that the middle of the 1970s marked a shift from the post-war Fordist era, characterized by the domination of mass production and the vertically integrated firm to an era of more intense global competition involving more complex and more flexible production networks. This shift has had important implications for the organization of work. Within firms, the Fordist approach centered on the pursuit of a highly fragmented division of labor and the breakdown of work into sets of simple, easy to learn tasks so that workers could be interchangeable or, for that matter, could be replaced by machinery. Facing more competitive, more fragmented, and highly volatile markets, many firms in the late 1970s and especially the 1980s responded by altering the structure of production in order to emphasize quality, diversification, customization, timeliness, rapid innovation, and customer service. Although sustaining high levels of productivity remains critical, the quality of work exacted from employees has become at least as important as the quantity. Not surprisingly, it is now widely recognized that firms face intense pressures to enhance the skill level of the workforce. (p. 13)

Thurow (1992) points out in his book, *Head to Head*, that in the new global economy, unlike in the past, countries do not necessarily become rich because they possess abundant raw materials. Natural resources have virtually dropped out of the competitive equation, he argues. What assumes primacy now are new technologies—more process than product technologies. And, according to Thurow, in the next century "the education and skills of the workforce will end up being the dominant competitive weapon" (p. 40). Elaborating, he points out the following:

> In the century ahead, natural resources, capital, and new-product technologies are going to rapidly move around the world. People will move—but more slowly than anything else. Skilled people become the only sustainable competitive advantage.
>
> If the route to success is inventing new products, the education of the smartest 25% of the labor force is critical. . . . If the route to success is being the cheapest and best producer of products, new or old, the education of the bottom 50% of the population moves to center stage. This part of the population must staff those new processes. If the bottom 50% cannot learn

> what must be learned, new high-tech processes cannot be employed. (p. 52)

Thurow argues that the quality of the team affects the overall income. He points to the way the noncollege-bound are catered to in Germany through the dual apprenticeship system. The Germans are not the best educated, he argues, but they are the world's best in the range of mid-level, noncollege skills. He argues that, "In the end the skills of the bottom half of the population affect the wages of the top half" (p. 56). American firms, Thurow argues, spend less on training than do Japanese or German firms. When they do, the emphasis is on managerial and supervisory skills. Thus, skilled workers are not as ready to adapt to the new breakthrough technologies.

Private Sector Interest

Though they probably lag behind their Japanese and German counterparts in terms of the depth of investment in worker training, there is recent evidence of increasing commitment in American companies toward such training (e.g., Benton, Bailey, Noyelle, & Stanback, 1991; Carnevale, Gainer, Villet, & Holland, 1990; Eurich, 1985; Fowler, 1992; Gordon, Ponticell, & Morgan, 1991; Merex Corporation, 1991). This increasing commitment clearly comes from an awareness of the burgeoning importance of human capital in the global economic environment. Eurich (1985) notes in the following that education has come to be seen as a business need:

> Gradually major companies are making human resource investments just as they would make capital investments—in essential education and training that will give employees skills, knowledge and attitudes that will make them more productive and competitive. . . . If America is to be an effective international competitor, then innovation, vitality, and effective training of the workforce are key ingredients. (pp. 2, 3)

However, skilled capability is but one (though a very important) variable in the international competitiveness equation. Training is not a panacea that can be expected to solve competitiveness difficulties. Benton et al. (1991) point out that training must be blended with larger goals such as promoting a work environment that is supportive of lifelong learning and adopting a posture that is responsive to change. Benton et al. also point out that those adults with the poorest education do not even make it into the workforce. This observation shifts the capability focus from the workplace to the school system.

Many employers believe that the basic skills deficiencies they now witness in the workplace are the result of faulty schooling (e.g., Gordon et al., 1991; Lee, 1988). Gordon et al. (1991), for example, argue that it is the school system that has failed to produce a skilled workforce. They speak of the "progressive failure" of American schools, reflected in the high illiteracy rates among adult workers who are high school graduates. They complain that schools are out of touch with the world of work and competition:

> Public schooling objectives still focus largely on industry-based skills: read, write, count, add, subtract, multiply, divide, spell, punctuate, comprehend and communicate. Success in information technologies and service occupations depends on an entirely different set of skills: diagnose, determine, estimate, obtain information, organize information, identify alternatives, analyze, plan, coordinate, work collaboratively, implement and monitor. (p. 6)

But while the demands of the new global economy have raised the level of concern regarding literacy levels in the workforce, there is no clear consensus that the education and skill requirements of jobs are significantly increasing. While many new jobs in the economy require higher levels of education, many others do not. There is some contention as to whether jobs are being upskilled, deskilled, or some combination thereof, referred to as "mixed" effects (e.g., Form, 1987; Spenner, 1985). Using workforce trend data, Rumberger (1981), and more recently Hadlock, Hecker, and Gannon (1991)—provides support for deskilling and mixed effects, pointing to a decline in jobs that require higher education. On the other hand, Bailey (1991) points to a steady increase in jobs in the economy requiring higher education. The view remains that credentials act merely as screens in the labor market, having no substantive link with jobs (Berg, 1970).

Just what the skill needs of employers are is an unresolved issue. The Commission on Skills of the American Workforce (1990) found that the primary concern of 80% of employers was not the literacy needs of workers, but, rather, finding workers with a good work ethic and good social skills. Just 5% of employers felt that the education and skill requirements of jobs were increasing significantly. This finding seemed not to fit with much of the rhetoric issuing from business and industry and official circles.

Policy

While there remains contention as to whether or not the education requirements of jobs are increasing, or whether or not employers are truly concerned about decreased levels of literacy in the skill pool, the policy perspective has been that there is need for federal intervention and leadership on these questions (e.g., Barton & Kirsch, 1990; Chisman, 1989; Chisman & Campbell, 1990). Barton and Kirsch (1990) conclude that a large gap exists between the literacy skills of a large proportion of young adults and the needs of workplaces—with the problem being particularly acute among minority populations. They call for immediate action on the part of the state. That the federal government has been responsive is evident in the passage of the National Literacy Act of 1991, and in the funding provided via the National Workplace Literacy Program.

The Changing Nature of the World of Work and New Skill Requirements

As can be gleaned from the discussion above, a central feature of the new global economy is that mass production is yielding to flexible production. An increasing number of workers must now possess multiple skills and must be able to change as production requirements change (e.g., Bailey, 1989; Bailey & Noyelle, 1988; Berryman, 1988; Wallace, 1989). In an insightful treatment of this issue, Wallace (1989) places technology at the heart of the workplace revolution. Speaking of a "brave new workplace," he points to the dominance of the microchip and the personal computer in the new economy. Information itself has become a product, he argues, because of the capability of these devices to assemble, store, and retrieve large amounts of data. Computer and micro-based technologies make possible "high-flex workplaces" featuring flexible, specialized production systems as opposed to standardized mass production systems. These changes have varying effects. One clear conclusion is that technological change is disruptive. As to effect on education, Wallace predicts volatile careers with multiple detours. What really are the skill requirements of the new workplace? Wallace says that a college degree will probably be the prerequisite for most good jobs. But for a host of reasons, the degree will continue to be out of the reach of many. In any case, most jobs will have more modest educational demands, but these demands are changing, and, contentions aside, seem more than ever to be requiring a basic skills foundation.

In the Secretary's Commission on Achieving Necessary Skills (SCANS) (1991) report, for example, the demands of workplaces upon schools are said to include a foundation of basics inclusive of the three Rs, thinking skills, and personal qualities. Arguing that there is a clear link between basic skills in the workforce and economic competitiveness, Carnevale, Gainer, and Meltzer (1988) set forth their own version of the skills that employers want. These skills included learning to learn, the three Rs, communication, creative thinking/problem solving, self-esteem/goal setting, motivation/personal and career development, interpersonal skills, and organizational effectiveness/leadership. In an elaboration on these ideas, Carnevale (1991) distinguishes between "academic basics"—reading, writing, and computation—and other basics. He claims that, on average, American workers spend from 1.5 to 2 hours daily reading a variety of materials (i.e., forms, charts) on the job, and speculates that these reading requirements will "increase and deepen because the growing complexity and scale of global economic activity will require more written communication" (p. 108). Carnevale points to some general trends in the nature of work such as the shift from specific to general skills, the shift from concrete to abstract skills, and the primacy of social skills such as self-esteem and self-awareness.

An important point made by Carnevale et al. (1988), and touched upon by Barton and Kirsch (1990) and Benton et al. (1991), is that not all of the workforce lack basic skills. However, there are pockets where the problem is chronic. Carnevale et al. (1988) note that

> The educated and trained half of the American workforce competes well with the white-collar and technical elites of its economic rivals. But the other half of the workforce is not as well prepared, and this is where the U.S. is losing the competitive race. (p. 7)

In Carnevale et al.'s (1988) study, distinguishing characteristics of those with low basic skills included (1) having frequent arrests, (2) being an unwed mother, (3) being welfare-dependent, (4) being a high-school dropout, and (5) being unemployed. As Barton and Kirsch (1990) point out, high percentages of these groups would tend to be minorities, a fact which adds a degree of complexity to the issue from the standpoint of social policy.

Workplace Literacy—Problems of Definition

Because the new workplace is said to call for a variety of skills, one must speak in terms of the *literacies* required for successful performance therein. There must, of course, be the academic basics—reading, writing, and mathematics. But as discussed previously, there is now a need for oral communication skills, for the skill of working in teams, problem solving skills, and so on. Since reading is so ubiquitous across workplaces and jobs, it has loomed large in the discourse on workplace literacy, and must be dealt with in order to come to terms with the meaning of workplace literacy.

Outside of the workplace, reading ability has often been used as an index of literacy. But reading in the context of one's job must be taken differently from reading at school. What, then, is workplace literacy?

Seeking to define literacy in the context of workplaces, Sticht (1988) distinguishes between general and specific literacy. General literacy (e.g., vocabulary and arithmetic operations) correlates with how much education one has acquired. Specific literacy proficiency is confined to circumscribed realms (e.g., electronics). Sticht reports that people with high levels of general literacy are more likely to make use of their literacy skills at work and to perform better on work-related tests than those less literate. Specific literacy or knowledge adds an increment of reading proficiency to those low in literacy skills. Practice also improves reading level for a specific task. Specific literacy may offset low general literacy. In other words, the workplace could mediate one's level of reading proficiency.

On the specific question of links between literacy and vocational competence, Sticht (1978) asserts that there is a clear relationship between reading ability and the reported use of reading skills rather than listening and languaging (or *auding*) skills. According to Sticht's study, more able readers were more likely to use print medium to complete work-related tasks. Use of reading increased as one's reading skill increased Furthermore, the use of print led to jobs being performed more accurately. Sticht concludes the following:

> If, by vocational competence, we mean the ability to perform job-tasks with high degrees of accuracy, then these findings suggest that the acquisition of reading [skills] may serve to augment the seeking of job information over that which personnel do by auding, and that the propensity to seek job information from printed sources may pay dividends in terms of improved vocational competence. (p. 9)

Sticht identifies two kinds of reading tasks: (1) *reading to do* and (2) *reading to learn*. The former serves as an external memory and tends to be used much more on job sites than in school.

Diehl and Mikulecky (1980) found that job-related literacy was probably the most important type of functional literacy. Subjects used reading materials to perform their jobs, not necessarily because such reading materials were absolutely essential to performing the job, but because they were available. About 63% of the reading tasks they observed were *reading to do* tasks. The reading was repetitive. They concluded that many jobs that have reading as a requirement may be unduly discriminatory, based on a false estimation of the reading demands of the job. They found, too, that on job-related materials, workers can read up to two grade levels higher than their assessed reading level. What's needed, then, is an information-rich environment.

After reviewing literacy work for the U.S. Army, Sticht and Mikulecky (1984) found that in job reading training programs, reading of job materials led to larger gains than did general reading. From this they assert that "if reading training is given in a well specified domain, then skill in that domain will improve" (p. 32). This idea of specific literacy, and of *reading to do*, is supported by *functional context theory*, which posits that biological circumstances and the context in which learning takes place determine what is learned, how it is learned, and whether the learning will transfer. According to Sticht and Hickey (1991), *context* can be thought of in two dimensions—the world "outside the head" and that "inside the head." The former dimension of context refers to one's external environment, including one's work surroundings. The latter refers to the mind—to one's cognitive abilities. When fully articulated, functional context theory includes a developmental model of literacy and a conception of learning as information processing. Functional context learning requires building new knowledge from old, dwelling on problems from the environment where the learning is to be used, and providing opportunities for practice and transfer.

The generalization one can make, therefore, might be that workplace literacy is specific literacy—it is literacy in the functional context of the workplace. But as Park (1992, p. 132) points out, where workplace literacy is concerned, the problem of definition is not easily resolved. And indeed, defining workplace literacy in contextual terms—distinguishing between general and specific literacies—is contentious. For example, Barton and Kirsch (1990) vehemently state that

> to envision distinct, separate kinds of literacy that are called upon in isolation from another is not a very useful concept. Specific literacy skills are not things that can be turned on and off in different settings. Life is not so compartmentalized; it is, in fact, a seamless web. All citizens need a

> broad base of literacy skills to function in the school, in the family, in the community, in the voting booth, and in the workplace. The challenge is to understand how such skills and knowledge in these several contexts are similar, and how they are different, as part of a critical effort to find ways to promote their development. (p. 32)

The idea that literacy should tend to be general—even in the context of workplaces—is the position of trade unions, notably the AFL-CIO. For example, Sarmiento and Kay (1990) posit a worker-centered approach to workplace education and training programs. Such an approach, they argue, "enables workers to fulfill many different kinds of learning objectives—from occupational advancement to self-advancement" (p. 32). We see this controversy in Gowen (1992) who speaks of the resistance of workers to job texts as the sole source of content for their reading (p. 91). Workers wanted to write stories that had meaning beyond their jobs.

What Works in Literacy Programs

Despite the contentions, the generalization most evident in the literature regarding the definition of workplace literacy, or what constitutes literacy, is that the skills must be tied to the context (Park, 1990). Enumerating the characteristics that make for effective workplace literacy programs, Cornell (1988) suggests that skills should be taught within a "meaningful context" to ensure transfer, and for the political reason that firms are more likely to support training if they see its link with training and performance. Park (1990) suggests that workplace literacy programs should contain two basic elements: (1) the premise of an assessment of the reading, writing, and math skills of the employees; and (2) the development of training programs in the three Rs that could deliver "the basic job skills needed for performance and job promotion" (p. 9). A study of the first year of the National Workplace Literacy Program revealed that two factors common to successful programs were (1) literacy task analyses and (2) instructional materials that were linked to literacy skills required on the job (Kutner, Sherman, Webb, & Fisher, 1991; U.S. Department of Education, 1992).

Mikulecky, Henard, and Lloyd (1992) argue that successful programs must be flexible, and must cater to the needs of a diversity of learners. For example, basic skills training could be coordinated with several other types of training, including ESL, GED, functional literacy, and so on (p. 6). To assure success there must be a systematic study of the job site, including a collection of work samples, an inspection of job descriptions, task analyses, and the building of political support (such as collaboration with unions) (e.g., Kalman & Fraser, 1992; Mikulecky et al., 1992; Park, 1990; U.S. Department of Education, 1992). However, there are caveats. Mikulecky et al. (1992) point out that any gains in literacy proficiency are lost in the absence of opportunity to practice. Park (1992) asserts that links between workplace literacy instruction and productivity are tenuous. This observation would certainly hold true for episodic programs. To realize productivity gains requires time for the accumulation of expertise.

Evaluating Workplace Literacy Programs

How are workplace literacy programs to be evaluated? From the National Workplace Literacy Program, several indices of success have been set forth, gleaned from exemplary projects. They include improved communication, reading, and math skills; high program completion rates; improved self-confidence; and increased productivity by some employees (U.S. Department of Education, 1992). Mikulecky and Lloyd (1992) recommend using a combination of standardized and customized instruments for evaluation. They suggest, in addition to indices such as improved reading ability and increased productivity, that improved family literacy (e.g., parents being able to model literacy practices for their children) might be an expected outcome of workplace literacy programs.

Just what is evaluated depends upon the literacy philosophy one entertains. If literacy is seen in purely instrumental terms, then improved productivity might be the only criterion of relevance. As Park (1992) points out, this is not an easy criterion to assess. Mechanisms must be put in place to foster valid and reliable estimation of productivity changes. In their study of the impact of workplace literacy programs, Mikulecky and Lloyd (1992) utilized indices such as data on employee attitudes (e.g., absenteeism and grievances submitted). They also sought to monitor both process (e.g., frequency of use of job aids) and content (e.g., specific job knowledge) aspects of productivity.

Because workplace literacy programs invariably issue from a functional, instrumental need, intrinsic measures such as improved self-confidence or carry-over into family literacy cannot be expected alone to gain the support of firms. The case for such measures must be argued by worker representatives (e.g., Sarmiento & Kay, 1990). What might be needed to make some of the more intrinsic claims of workplace literacy programs more palatable is demonstration of how such effects can ultimately redound to the objective benefit of firms.

Vocational Education and the Changing Workplace

That vocational education plays a major role in preparing youth and adults for roles in the workforce cannot be disputed. However, with changes in the workplace and in the nature of work, it has become clear that vocational education, though still having a crucial role, requires a new conceptualization to be relevant to the human capital needs required in the global economy. Workplaces alone cannot meet these needs of the American workforce. Vaughan (1991) argues, "Economic success—internationally and in all our communities—depends on investments in human capital. And vocational education investments play a major role" (p. 448). He notes that employers cannot fill the basic skills gap through training, since "only forty-five percent of high school dropouts receive any occupational training on the job" (p. 448). Vaughan reasons that, "because vocational programs are closely linked to labor markets, they can quickly and economically train displaced workers in skills that are in demand, thus drawing poor people into the economic mainstream" (p. 448).

This sort of reasoning resonates in the provisions of the Carl D. Perkins Vocational and Applied Technology Act of 1990. The purpose of the Perkins Act is

> [T]o make the United States more competitive in the world economy by developing more fully the academic and occupational skills of all segments of the population. (American Vocational Association, 1990, p. 49)

This conception of a role for vocational education in preparing the workforce for today's competitive environment is driven in large measure by unfavorable comparisons with trading partners, notably Germany (e.g., U.S. General Accounting Office, 1990). Reflecting on the Perkins Act, Warnat (1991) sets forth that vocational education must become more proactive. It must make the public more aware of its role and potential as "the primary preparer of the nation's world-class work force and where our work force stands in the global economy" (p. 25). But, with the retreat from vocationalism noticeable in American public schools (e.g., Gray, 1991; Wirt, Muraskin, Meyer, & Goodwin, 1989), it cannot be said that there is consensus regarding the nature of vocational education's role. It is clear that vocational education must adjust to the times.

Integrating

One plank of the Perkins Act is the integration of vocational and academic curricula. The Perkins Act provides funds to support programs that

> integrate academic and vocational education in such programs through coherent sequences of courses so that students achieve both academic and occupational competencies. . . . (American Vocational Association, 1990, p. 86)

Addressing this question, Jennings (1991) offered the following view:

> There's little doubt that American students need to boost their academic skills, and Congress believes vocational education has the ability to do just that. (p. 18)

There has been much support for the idea of integration (e.g., Gray, 1991; Grubb, Davis, Lum, Plihal, & Morgaine, 1991; Rosenstock, 1991; among others). Many see this thrust as the way to change the course of vocational education from occupationally specific technical skill development to a more generic orientation that is premised on a broader conception of the requirements of today's industry and jobs. There is the view that vocational classrooms must become more deliberately attuned to workplace basic skills.

As an example of such a thrust at the level of the classroom, Martinez and Badeaux (1992) report an increase in academic achievement when mathematics and English were taught in the context of welding. Feller and Daly (1992) describe efforts made by counselors to show the relevance of new workplace basics in the context of vocational education. In their examination of vocational education classrooms that work, Stasz, Ramsey, Eden, DaVanzo, Farris, and Lewis (1993) observed generic skills which they classify as "basic enabling skills" (e.g., reading, writing, and filling out forms), "complex reasoning skills," and "work-related skills and attitudes" such as self-esteem and self-management (p. 3).

Tech Prep

One of the major funding categories of the Perkins Act is Tech Prep. As set forth in its original conception by Parnell (1985), Tech Prep seeks to articulate the curriculum of the last two years of high school with two years of postsecondary vocational education. It is premised on the integration of vocational and academic content at the "prep" stage, where courses such as mathematics and science are expected to be taught in the functional or applied context of vocational courses. As Gray (1991) points out, the Tech Prep idea now has great legitimacy among vocational educators as a model of the future—as a way to shift secondary vocational education away from occupationally specific training, while providing for transition between schooling and the world of work.

Vocational Education and Diversity

Discourse on the basic skill needs of the American workforce must take into consideration the fact that the demographic character of the workforce is changing. As discussed earlier, there are pockets of low basic skills in the workforce, tending to correlate with social class, race, and ethnicity. Recent immigrants could be expected to have low levels of proficiency in English, which translates into communication difficulties in the workplace. Vocational education has traditionally played a major—if controversial—role in the work life of those at the margins, and is being called upon to play a role in readying immigrants for the workforce by providing them with needed technical skills. In the process, it can offer them a chance to learn English in contexts of jobs. Indeed, vocational education, because of the opportunities it provides for contextual learning and practice, may be a more suitable vehicle for the enculturation of immigrants than regular education. Beyond opportunity for practice, it allows opportunities for transfer of learning (e.g., Housel, 1991; Kidder, 1991).

Vocational Education and Basic Literacy/Basic Skills

Vocational education traditionally caters to noncollege-bound students among whom concentrations of low levels of literacy can be expected. Oakes (1985) has shown this propensity of vocational education programs to attract minority and otherwise disadvantaged students. Vocational education attracts disproportionate numbers of low SES students. But from the discussions above, it can be seen that many of the clientele who traditionally will be attracted to vocational education, whether in the secondary or postsecondary sector of the school system, would likely be the same clientele found to be lacking in the skills employers want. Sensitive to changing requirements in the workplace, vocational institutions have increasingly had to take on a remedial skills role (e.g., Grubb, Dickinson, Giordano, & Kaplan, 1992, p. 118).

Since vocational education is a natural preserve of those communities at the literacy margin, it cannot help but be at the front lines of the war on workplace illiteracy. This awareness of vocational education's role—this need for vocational institutions and programs to reflect literacy more deliberately—is evident in the more recent literature of the field (e.g., Barrick & Buck, 1987; Breeden & Bowen, 1990; Busse, 1992; Ciancio, 1988; Davis, 1988; Dees, 1990; Keeley, 1990; Knell, 1990; McIlvoy, 1989; Pritz, 1988; Seamon & Newcomb, 1990). A central theme is that the three Rs along with problem-solving, communication, and interpersonal skills, must become the business of vocational education. Keeley (1990) speaks of finding out through analysis the academic content of each job. Literacy skills must be documented. Barrick and Buck (1987) identify eight keys to employability: (1) personal skills (e.g., honesty and a good self-image), (2) problem-solving and decision-making skills, (3) relations with others, (4) communication skills, (5) task-related skills (e.g., completing work on time), (6) maturity, (7) good health and safety habits, and (8) commitment to the job. Dees (1990) describes how using computers in vocational instruction to teach basic skills decreased the dropout rate in a high school vocational program. She speaks of the "basic skills conundrum," which is that "time spent remediating students with reading and math deficiencies is time lost to vocational preparation," and, yet, students need to remedy these deficiencies to meet graduation requirements and to be successful on the job (p. 30). Ciancio (1988) describes the challenge of finding methods to teach literacy skills to adults using Principles of the Alphabet Literacy System (PALS), an IBM solution to the problem. Pritz (1988) posits that academic skills should be "embedded in vocational tasks" (p. 25)—that vocational and academic skills should not be taught in isolation from each other. Addressing the problem of workplace literacy directly, and the role for vocational education, Knell (1990) calls for vocational teachers and administrators to collaborate with stakeholders (e.g., business leaders, unions, community representatives, social services, and so on) to deal with the problem. They could take the lead in the formation of state institutions constituted solely to deal with the problem. Busse (1992) asserts that what employers want, and what vocational education must provide, are workers who are self-confident, intelligent, cooperative, possess technical knowledge, dress properly, possess good math and reading skills, and have a willingness to be involved in the company's "entire operation" (p. 47). There is evidence that vocational education clients understand the need for new basics. A sample of community college occupational graduates and other former students rated English as the most important general education course in their associate degree program.

They also rated communication skills and critical thinking skills as two important clusters of courses (Vogler & Armistead, 1987).

From the very way in which workplace literacy is defined, and the way in which the problem is framed, a clear role for vocational education seems to be possible. In the first instance, vocational education, by nature, tends to teach basic literacy skills in context. Related math and English (e.g., welding mathematics and business English) are vocational education staples. Further, the traditional curricular procedures of the field are consistent with those posited as being good practice and likely to engender successful workplace literacy programs (e.g., techniques such as examination of job descriptions, task analyses, and so on). Another enabling factor would be the traditional ties with industry and the use of industry sources (typically advisory committees) to determine content. What is needed now is for vocational educators to more deliberately emphasize the dimension of literacy. An example of this is having vocational educators collaborate with reading specialists to create their curricula (Kakela, 1993).

Summary/Reflections

This conceptual framework sought to establish a link between the new reality of competition in the global economy and increasing calls for literacy in the workforce, then to establish that there must be a role for vocational education. Our review has helped make the case that there is indeed a role for vocational education in readying the workforce for changing times, but that it differs from the traditional technical skill-specific role. Vocational education is in step with the larger discourse on the human resource requirements for competitiveness in the global economy. The need for the inclusion of basic skills in vocational curricula is evident—that is, basic skills broadly conceived to include not just the three Rs, but also problem-solving, interpersonal, and communication skills—however, it is broadly conceived. Because workplace literacy quintessentially thrives in a functional context, and because those deficient in basic literacy skills are more likely to patronize vocational institutions than other institutions, it is imperative that vocational educators come to embrace the new possibilities that these realities present.

Premises/Hypotheses

The review has helped to crystallize some basic premises or hypotheses that can undergird our approach to the cases. They include (1) that because of its traditional role in the education of disadvantaged populations (a role that is legitimized in the Perkins Act of 1990), and the fact that these populations are the ones that need workplace literacy skills most, vocational education may play a natural role as a workplace literacy provider; (2) that vocational education institutions may have a comparative advantage as a literacy provider because not only do these institutions provide initial job preparation, but they also can provide upgrading preparation to meet the changing nature of jobs and skills and the lifelong learning needs of workers; (3) that vocational education institutions may have a comparative advantage over other providers because of their tradition of working cooperatively with industry to develop workplace-based curricula, and the flexibility they display in so doing; and (4) that vocational education provides a natural vehicle for the teaching of literacy skills within a functional context—for integrating literacy skills with technical content.

METHODS AND PROCEDURES

We set out through observation of selected workplace literacy initiatives to better understand how workplace literacy programs are configured and run in order to clarify the possible roles for vocational education institutions in such programs, whether within their walls or on-site in actual workplaces. We decided to focus on a limited number of programs and to adopt the case study approach to inquiry. To assure reliability, data collection was triangulated through use of multiple sources of information, including on-site observation, document examination and analysis, collection of artifacts, and formal and informal interviews of key informants (e.g., Yin, 1994).

The review of literature provided the framework that guided the logic of the inquiry. This framework highlighted theoretical issues that helped in the framing of questions for the development of protocols used for semistructured interviews and in sensitizing us to what we should look for as we observed, and what possible meaning we could deduce from our observations. Among the more important issues unearthed by the review were (1) the problem of defining literacy, (2) general versus specific literacy (or functional versus critical literacy), (3) misconceptions about what workers know, (4) assumptions of functional context theory, and (5) worker versus management conceptions of what workers need to know.

Selection of Initiatives

The staff were interested in selecting initiatives that were each distinctive so that together they could provide a comprehensive picture of the range of possibilities and problems that workplace literacy programming presents, and that could allow insight into the question of whether vocational institutions can claim a comparative advantage over providers in the workplace literacy enterprise. Accordingly, based on our understanding of the literature, we first outlined a set of dimensions that would guide our choice of initiatives to study. Since our methodology was to involve in-depth, ethnographic methods, we needed accessible, within-state initiatives where we could spend the long hours needed. Nothing in the literature suggests that there are major between-state differences in the approach to workplace literacy. Much of the variation in such programs can be substantially observed within-state if, *a priori*, one deliberately takes such variation into account in selecting initiatives. Accordingly, we chose sites from the respective states of the principal investigators.

Rather than using a random sampling, we selected initiatives for study on an estimation of the extent to which they reflected important workplace literacy program dimensions, and the value each would add to our overall understanding. Dimensions along which each initiative was chosen included the following: (1) whether it appears—or at least claims—to adopt practices deemed within the context of the workplace literacy enterprise to be exemplary (e.g., literacy audits, functional context curriculum development, testing of workers, and job and task analyses); (2) the employment status of the trainees (such as entry level, dislocated worker); (3) whether there were significant numbers of immigrants or ESL trainees; (4) type of firm (e.g., high-tech versus low tech, service versus manufacturing, or small versus large); (5) how it is funded (e.g., state, federal, or other); (6) where it is located (urban, suburban); (7) sector of the economy (public versus private); (8) ethnic or racial diversity (e.g., significant numbers of non-white trainees); (9) approach to literacy (general versus specific or functional); (10) reason for program (e.g., multiskilling, basic skill improvement, or new technology); and (11) whether or not a vocational institution was involved. These criteria highlighted important dimensions along which workplace literacy programs vary. It was agreed that five well-chosen initiatives, varying along lines as entailed here, could provide the intelligence on workplace literary programs we needed. Since the primary interest was to be able to gain sharper understanding of the possibilities for vocational institutions, we decided that it was imperative that workplace literacy initiatives involving vocational institutions be included among the cases.

Based on the described criteria, the staff were able to identify and gain permission to study five suitable initiatives set in our respective states. Of these, three involved accredited vocational institutions, and the other two a common private provider operating in one state. Informal consultation with officials at the U.S. Office of Educational Research and Improvement and with state officials revealed a perception that this was an exemplary private provider, a perception which was evidenced by a track record of state and federal funding of competitive workplace literacy proposals. Because its specialty was education for work, this provider was philosophically a vocational entity. However, if it was viewed against a model of what we know a vocational institution to be, it would be considered by vocationalists to be an outlier or even a pretender. Its seeming credibility was such that this provider could not be ignored. Staff surmised that comparison of its approach with that of accredited vocational institutions would set the unique claims of the latter in sharper relief. Beyond a description of two initiatives of this provider, a separate account of its modus operandi is provided. Following a description of each case, hypotheses derived from the conceptual framework (set forth earlier) are reflected upon as an estimation is made about the efficacy of claims regarding uniqueness or comparative advantage that vocational institutions can make.

To set the stage for the cases, a thumbnail sketch of each case is now set forth as an advanced organizer for the study. The cases are as follows:

Case 1—A hospital services workers project (Skills for Tomorrow)

Case 2—A high-tech manufacturing company's basic skills project (Skills 2000)

Case 3—A banking basic skills project (NEET)

Case 4—A hotel ESL project for immigrant service workers

Case 5—A workplace literacy-focused, community-based vocational institution

Case 1

Case 1 describes a federally funded workplace basic skills project entitled Skills for Tomorrow that was a collaboration between a union, four hospitals, and a two-year postsecondary technical college. The role of the college was of interest in this case. The problem was to upgrade the basic skills of workers so that they could understand written workplace documents better and so that they could improve their interpersonal skills and gain greater awareness of the operations, with the ultimate effect of becoming multiskilled and ready to assume tasks other than those in their regular areas of work. The trainees were primarily food service and laundry workers. The description is based on one year of on-site observations, interviews, and document inspection. The college administered its part of the project through its customized services department.

Case 2

Case 2 also features a two-year postsecondary technical college as provider, this time in a company-sponsored basic skills program called Skills 2000. Again, the focus was on the role of the college. The college was working with a high-tech company operating out of a small midwestern town, situated about one and a half hours away from the metropolitan center. The college engaged the services of a literacy expert, and under her guidance pretested a cross section of the company (including engineers, managers, and maintenance workers), and analyzed the level of actual workplace reading and math skills needed as the basis for developing the curriculum. As with Case 1, this college also administered the project out of its customized services unit. An important asset of the college was that it has been a provider of Adult Basic Education (ABE), and accordingly has staff who have been attuned to the problem of literacy in the context of work.

Case 3

Case 3 is a description of a basic skills program for hourly paid employees at the branch of a major metropolitan bank. The provider was the Workplace Education Center (WEC), a nonprofit entity that specializes in workplace literacy training. The problem was that workers were having difficulty understanding clients' written instructions to the bank regarding remittances. Some workers had difficulty converting sums expressed in words to numerical form.

Case 4

Case 4 is a description of a hotel workers' ESL training program, designed to improve the spoken and written English of service workers, predominantly Spanish speaking. As with Case 3, the deliverer was WEC. This program was jointly funded by the state (through special funds set aside for promoting workplace literacy training) and the hotel.

Case 5

Different from the four previous cases, Case 5 describes the operations of an alternative vocational school run by a community-based organization. The school specializes in community outreach and is a haven for populations that are difficult to reach such as welfare recipients, the unemployed, immigrants, ethnic minorities, and so on. Its curriculum is a mixture of technical training and literacy training. Its facilities feature basic skills (i.e., reading and math) labs, run by trained specialists and teachers from the public school system. Its funding sources are varied, and include state reimbursement for placement of students, Pell Grants, and others.

CASE 1
A HOSPITAL SERVICES WORKERS PROJECT
(SKILLS FOR TOMORROW)

Background

This hospital project was federally funded under the National Workplace Literacy Program, and was intended to improve the capacity of the partners, the Union Educational Bureau (representing its local health care union), Redwood Technical College, and four hospitals "to develop systematic workplace literacy approaches and strategies that assist hospital service workers in overcoming job-specific skill deficits posing barriers to their continued employment, increased productivity, and career advancement" (as cited on p. 3 of grant proposal). The occupational classes targeted were primarily food service workers and housekeepers. The duration of the program was eighteen months, the norm for initiatives in the National Workplace Literacy Program.

The need for the project was argued in the grant proposal on a number of grounds, as follows: (1) the targeted classes of workers lacked basic skills; (2) immigrants needing ESL proficiency were included; and (3) new medical technologies were changing the nature of work in the health care industry. It was thought that approximately 15% of the targeted classes of workers were underperforming and would benefit from the proposed training.

The needs of the hospitals were set forth against the backdrop of the perceived nationwide decline in the level of literacy skills in the workforce. Concerns were expressed about the sharply declining quality of applicants for hospital service worker positions. It was argued that the state's formal vocational training infrastructure prepared only a fraction of hospital service workers. Redwood was the only technical college in the state offering programs for these classes of workers. The proposal pointed out that, increasingly, Redwood was being asked to expand these programs and that "integrating literacy and basic skills approaches with job-specific skill training is viewed as the most effective and efficient means for ensuring the productivity and retention of service workers" (as cited on p. 15 of grant proposal). It was argued further that there was need for consideration of "cost-effective methods for delivering job-specific literacy skill programs on an ongoing basis," that within the state "basic skills and technical skills can be integrated and both taught at a fraction of the cost of separate types of programs" (grant proposal, p. 15). This ideal of integrating basic skills with technical skills unfortunately did not materialize in the project since technical skill training was not allowed under National Workplace Literacy Program rules. The project had to proceed under this constraint—a severe one for a vocational institution.

Benefits expected to accrue from the project included productivity gains for the company, and literacy upgrade and career enhancement opportunities for workers. The following excerpts from the grant proposal are instructive:

> A comprehensive training curricula (sic) that encompasses the full range of literacy and basic skills required of hospital workers across varied occupational classifications would be developed and implemented for the specific purposes of assisting workers in the four participating hospitals to retain their current positions, increase their productivity, successfully upgrade their skills in relation to industry changes, and create new opportunities for career advancement.
>
> All training will be outcome-based and linked directly to expected job performance criteria that will allow for systematic evaluations of hospital workers by employees on an ongoing basis beyond the funding period.
>
> Cost-effective strategies for the delivery of training via technical college education partnerships will be fully developed and evaluated. (p. 16)

Participation in the program was to be voluntary, limited to unionized workers of the classes indicated above. This requirement that the program be voluntary was another constraining factor, in that it offered the real possibility that those most in need would not submit themselves for the courses. They would not want their shortcomings exposed if they could help it.

About the Partners

The four hospitals in the project (to be referred to hereafter as hospitals A, B, C, and D) together employ 17,804 full-time and part-time workers, accounting for approximately one-fourth (24%) of the state's total hospital workforce. Of the 17,804 workers, 2,830 are classified as hospital service workers (i.e., nursing assistants and orderlies, dietary aides and food service workers, and housekeepers and building maintenance/custodians). A brief thumbnail sketch of each hospital follows.

Hospital A

Hospital A, an urban hospital, has a workforce of 2,026 full-time and 3,558 part-time employees. Some 740 of these workers (i.e., unionized health and nonhealth support service staff) were targeted for the project. This hospital is known nationally for its programs in an array of fields such as cardiology and orthopedics. It is also known as a center of excellence in nursing training in the state.

Hospital B

Also urban, Hospital B employs 2,580 full-time and 2,507 part-time staff. About 942 of these workers are classified as hospital support personnel. This is a teaching hospital and clinic, known worldwide for excellence in various specialties including organ and bone marrow transplantation and cardiopulmonary disease.

Hospital C

Hospital C, also urban, has 2,268 full-time and 2,092 part-time employees. Approximately 676 of these are service workers. It is well-known statewide and nationally for programs of excellence in an array of fields including cardiovascular medicine and obstetrics and gynecology.

Hospital D

Hospital D, which is suburban, employs 1,307 full-time and 1,466 part-time employees. Of these, 472 are health and nonhealth support staff. This hospital is known for its work in trauma and crisis intervention. It specializes in a broad range of patient services in fields such as mental health, cancer, and geriatrics.

The Union Educational Bureau

The Union Educational Bureau is a service arm of a major national union. As set forth in its mission statement, its purpose is to "help raise the quality of life of the Union membership . . . ." Its primary function is to "provide information and referral services." It does this by working cooperatively with "existing human service agencies." The bureau works in partnership with educational agencies to offer workplace literacy programs for its clients. It also specializes in educational programs for dislocated workers.

The bureau holds the philosophy of collaboration between labor, management, and education partnerships in the planning and delivery of services to its clients. It was in that vein that it joined with Redwood and the hospitals for the project to be described here, with the clients coming primarily from the local health care union, along with two other local service worker unions.

Redwood Technical College

Redwood Technical College is a two-year postsecondary vocational institution located in the suburbs of a large midwestern city. Accredited by the North Central Association of Colleges and Schools, it offers over fifty majors leading to diplomas, and, in conjunction with a nearby community college, several Associate of Applied Science (A.A.S) degree programs. As indicated above, the college is unique in that its curriculum is completely individualized and outcome-based. Like other technical colleges in the state and elsewhere, it has ties with industry, but here again it has unique strengths through its customized training infrastructure, which is specially staffed and which constitutes a deliberate thrust of the college. This customized function is augmented by the college's distance education capability. The college can tailor programs to specific employer needs. It specializes in needs assessment and instructional design.

Redwood is sensitive to the contemporary work scene. Its mission statement speaks of commitment to training "a diverse population with lifelong educational opportunities leading to productive, meaningful lives for the benefit of a global society . . . ." Goals set forth in its brochure indicate, among other things, an obligation to "provide a skilled workforce for the global economy" and to teach not just technical skills, but problem-solving and creative thinking skills. The following excerpts of goal statements taken from a college brochure reveal that basic skills have been integral to programming, and that the emphasis here is increasing:

- *General studies and related education.* To ensure that students acquire a knowledge of communications, mathematics, and the sciences that will enable them to successfully compete in the workforce or prepare them for further study.
- *Developmental education.* To identify and assess the basic skill levels of all students and provide opportunities to ensure that students develop appropriate

reading, writing, mathematics, and ESL competencies to succeed in college-level studies.

- *Lifelong education.* To instill in students an understanding that learning is a never-ending process.

Within recent years the college has been customizing literacy training for industrial clients and has been acquiring expertise along these lines. This expertise has been recognized to the point where these two entities in tandem have won large federal grants under the National Workplace Literacy Program, with Redwood having major curricular, logistical, and instructional responsibilities. As indicated above, a major intent of these grants is to help the partners develop workplace literacy capability. Because participation in workplace literacy programs is a fairly new line of activity for vocational institutions, we sought to gain first-hand knowledge, through qualitative processes, of what is required of these institutions in such programs, what expertise they bring, what the limits of this expertise are, and, therefore, what the niche is to which they can lay claim.

The Workers

As indicated above, the workers targeted by the program came primarily from food and housekeeping services. Of the 210 who participated, 150 (70%) were Caucasian, 38 (17.7%) were African American, 13 were Native American, 6 were African, 4 were Asian, and 3 were Hispanic. Two-thirds were female and one-third were male. In sum, the workers targeted were diverse, with the African-American representation being about three times that found in the state, the latter anomaly being a function of the low status of the jobs that were targeted for the program. The relatively high proportion of women was also a function of the classes of jobs targeted in the program.

Purpose

Our purpose was to gain an in-depth understanding, through first-hand observation, of the unique role of Redwood in the implementation of this workplace literacy training program to be able to draw inferences that could be instructive for other vocational institutions as they consider venturing into workplace literacy programming. Were there aspects of Redwood's approach that appeared to give it a comparative advantage as a literacy provider? Accordingly, our focus was on the process of partnering, the basic philosophy of workplace literacy that guided the project, the approach to curriculum development that this philosophy engendered, the actual curriculum, and the approach to instruction.

Scope

Consistent with our purpose, the investigation concerned itself with the philosophy and processes (e.g., partnering, developing the curriculum, and approach to instruction) adopted by Redwood as it implemented its part of the project, and not with promised outcomes of the project (e.g., increased productivity or improvement in literacy). In any case, the project staff did not establish the controls nor collect the data that would allow an evaluation of measurable outcomes.

Our scope was limited to an examination of philosophy and processes. Instead of stated outcomes, we used as our referents well-founded theoretical and research-based positions (e.g., conceptions of the nature of literacy, functional context theory, and the skills employers want) to be found in the literature. Whenever we interrogated any of the stances or actions taken in the project, it was against our understanding of positions to be found in the literature.

Method

We sought and got permission to observe Redwood at work from the inside, as it executed its part of the project. Key informants involved with the project at Redwood, the hospitals, and the Union Educational Bureau were interviewed. They included college administrators, Union Educational Bureau officials, hospital project representatives, union stewards, instructors, and workers. We became an unobtrusive part of the project and were able to make close observations in the field for a period of nine months. During this period we conducted approximately fifty hours of formal, taped interviews, spent more than two hundred person/hours making observations at the sites (e.g., classes in session and promotional events) and conducting informal interviews, and examined documents related to the project (e.g., minutes of meetings and curriculum and instructional materials). We achieved triangulation through this process of observations, interviews, and document analysis, and through cross-checking of data across multiple sources. Finally, two successive drafts of our final report on the project were shared with the Redwood staff to substantiate the authenticity and accuracy of the observations and interpretations.

What Qualified Redwood Technical College To Be a Workplace Literacy Provider?

Just what makes a vocational institution suited to conduct workplace literacy programming? This was a central concern of this study. Examination of the institutions that have successfully won grants in the National Workplace Literacy Program reveals that they constitute an eclectic array of deliverers, including community colleges, universities, departments of education, school districts, unions, community-based organizations, private contractors, and two-year vocational/technical colleges. One reason for this diversity of deliverers is that no single institution can claim a monopoly on literacy capability. The literacy market possesses many segments (e.g., ESL, ABE, technical skills and processes training), however, eventually these deliverers must specialize in some way. They must carve out market niches based upon their unique capabilities.

To try to discern Redwood's unique claims, we interviewed its project staff, Union Educational Bureau officials, and hospital representatives attached to the project. In addition, we examined the college's promotional brochures. Since Redwood had been invited to be a partner in the project by the Union Educational Bureau, we asked "Jane," the president of the bureau, to explain the role that the college was expected to play. Jane indicated that while the union had been "the administrative recipient of the grant dollars," Redwood performed "the lion's share of the work . . . they get the lion's share of the budget." She pointed out that "they are curriculum specialists," who are able to customize work-based programs for the classes of workers represented by her union. "Ralph," another high-ranking official at the bureau, concurred that the college brought "a great deal of sophistication" to the task of fashioning workplace-based literacy curriculum. From the standpoint of the union officials involved, then, it was its expertise in curriculum and instruction design and delivery that made Redwood a suitable partner in the project.

Conversations with Bret, who had been president of Redwood, and John, who had direct responsibility for the customized services aspect of the college's workplace literacy thrust, provided unique insight on the peculiar strengths they felt the college brought to this new area of programming. Excerpts from joint interviews with them follow:

> *Researcher*: We are interested in what vocational education institutions can do to foster workplace literacy . . . what role vocational institutions can play.

> *Bret*: First of all I think you've already mentioned that we are dealing with workplace literacy here and not just the overall concept of literacy. And that's the reason we became involved in it. [It] was specifically because the workplace has been [and] obviously fits in with the mission of the college and education for employment. It's maybe a key issue with productivity and making employees just better employees. It's a technical college. That was really our background, to make sure that we are training for employment. Up until four or five years ago we were not doing much in literacy as such. But we did find from our meetings with the [Union] Educational Bureau, as well as with employers, that there was a fairly consistent need out there for companies to be involved with literacy types of activities. *So we are the experts on the instructional part* [emphasis added] that is where we came in to this. . . . I think that is how we viewed it. That's why the [union] felt that we were a key partner in this . . . is that they have the expertise in working with employees in a variety of service areas—we have the expertise of delivery of instruction. So that was our key role in that, and that's why we wanted to become involved in the whole process of working with literacy.

This perception of expertise in instruction geared to the workplace was consistent with the view held by union officials. But we were interested in whether Redwood did not now have to add a literacy-specific piece to its normal repertoire of competencies.

> *Researcher*: You're bringing that instructional piece, but did you not have to add the literacy piece on to that? Traditionally, the vocational institution focuses on what does it take to get the job done. Do you now not have to add the literacy piece? Or do you just have to do the same thing you were doing before?

> *Bret*: It was a combination of both. One is that our definition of literacy . . . is the basic skills that employees need to be successful on the job. . . . With that definition then, some of the things that we had been doing were right in line with that definition. But there were some other things that we needed to add. We added those really as part of the various projects that we were involved with. ***What we added was really a lot of work with employers and the employees to find out what skills they needed*** [emphasis added], so it wasn't just our assumption of what was needed, but it was actually going in and asking the other people in the companies, management, and the staff that are there as to what they needed.

What Bret was suggesting here was that from his institution's perspective, workplace literacy meant the ability to perform jobs competently. That being the case, the college was not entirely a newcomer to this area of programming. Literacy in the context of workplaces did not necessarily have to mean the three Rs.

We suggested to Bret that perhaps it was the practical nature of vocational teaching and learning that made his institution suited to such literacy programming. He concurred, explaining as follows:

> It's been an applied approach, in that it's not just doing it in the classroom. But what we've done is related it specifically to the situation that the employees will be in, so that they are not just hearing about some things, but they're actually living it. They know what's going on. *Everything that is done had been done in an applied context* [emphasis added]. And that is, in my opinion, why technical colleges are so unique and so important to the whole area of workplace literacy. . . . Many other institutions, whether it's a K-12 school district or whether it's the university, their instruction is not as applied, is not as workplace applied as the technical colleges. I think that is the key difference in what we are talking about here.

From the perspective of college personnel, then, it was a tradition of customizing curriculum for workplaces and offering applied courses that made the institution a natural for being a partner in workplace literacy. These could be described as *technical competency* reasons.

One alternative that these officials did not explore was that the institution had face validity—that it was credible on account of what it embodied, namely a postsecondary education opportunity. We were to hear this perspective expressed elsewhere. When asked about Redwood's contribution to the project, a business representative of the local union offered the credibility explanation:

> *Representative*: I think it was absolutely necessary. . . . Really, in my mind, [Redwood] legitimized the whole program . . . I mean they're teachers . . . .
>
> *Researcher*: What if it had been City public schools, rather than a vocational school? Would it have been any different?
>
> *Representative*: Well, in my mind, [a] vocational school would be more—progressive wouldn't be the word—but most of the people that are in the bargaining unit have either their diploma or GED. Most. Now a lot of them . . . sure don't. And not that [that] really matters, but it seems like votech probably turns more people on. . . . In other words, if City public schools would have offered it, people would have said, oh, you're dumb. You have to go back to school. Votech offers it, it's [not] secondary education, it's advanced education. . . . That's what I meant by progressive.

Jim, a hospital official associated with the project, expressed the view that Redwood was "attractive" to workers. It was relevant—unlike regular schooling. But on the question of its unique contribution to the project, he was willing to allow that conceivably another provider, such as a school district, could in the same circumstances deliver an equivalent program. The following excerpts capture these thoughts:

> *Researcher*: [Redwood] as a technical college, of course, has a vocational background. Do you think that made any difference? Say one of the school districts had come with the same kind of offer . . . ?
>
> *Jim*: I don't know that I can give you an honest answer. I think that the fact that they are a vocational school is attractive. . . . If a City school district came, I do not know if there would be any resistance or difficulty (getting people involved) or if it would be easier.
>
> *Researcher*: I can ask the question better. Do you see anything in what (Redwood) has done that has been good that's because they are a vocational school?
>
> *Jim*: Again it's hard to say. I think it will all depend on if a school district were to present this, how they would do it? How you do it and how you present it and how it's packaged is [going to] make a big difference. . . . I think that the idea of it being a vocational school is attractive to our employees. . . . I can't say for sure, but my guess is that, knowing that this is a vocational-based organization that's putting the time and effort into it would create something of an expectation of our employees, well, this is going to be relevant training. This isn't [going to] be social studies and geography. This is [going to] be aimed at specific job skills. But I'm not saying that the school district couldn't put it together. I'm saying [*that*], I think, was an underlying expectation when you are talking about vocational school.

When the views of all parties canvassed on the question of Redwood's workplace literacy credentials are taken together, four clearly perceived strengths of a technical college emerge: (1) a tradition of working with industry to determine work-related needs, (2) the ability to convert workplace-based needs analyses into curriculum, (3) an appeal to workers as higher education and not public school remedial education, and (4) the acceptability by workers on the perception that programs will be workplace relevant.

One obvious strength of a college that could not find a place here was the ability to deliver technical skills, which, as indicated before, was not allowed in the context of the grant. Thus, the curriculum that Redwood could offer, though workplace-based, had to be taught, and indeed was taught, under school-like conditions. In the circumstances, the view that a nonvocational provider might be an equally credible partner in the project was not unreasonable. In partnership with unions and industry representatives, it is quite conceivable that school districts can develop capability to deliver workplace literacy programs, especially when such programs do not require a technical skill component and when they focus mainly on decontextualized workplace basics such as the three Rs, communication, and so on. To carve out their special niche, vocational institutions must illustrate clear separation of their capabilities from that of competitor providers; they must do so by claiming ground where others cannot easily traverse and/or by showing that they are better at doing what competitors do. They cannot seriously claim monopoly on the teaching of reading, writing, or mathematics. As Bret points out above, their strength is in work-based applied curriculum and instruction. They are not literacy specialists *per se*.

Basic Skills

Since basic skills are so central to the discourse on literacy, we were interested in whether the ability to deliver such skills could be part of the case for Redwood being a workplace literacy provider. Workplace basics include learning to learn, the three Rs, communication, creative thinking/problem solving, self-esteem/goal setting, interpersonal skills, and leadership (Carnevale et al., 1988, p. 16). These skills correlate with those set forth in the SCANS Report (1991). As indicated above, vocational institutions have a tradition of teaching the theory related to skilled occupations—welding mathematics, business English, or technical writing. And, due in part to accreditation requirements, such institutions have been increasing the general education component of their programming. We sought to establish just what the status of this aspect of programming was at Redwood. Excerpts from an interview with Bret and John are instructive.

> *Researcher* (paraphrased): How are things like mathematics, English, [or] communication, programmed in your curriculum, separately, across the board, or within courses? It seems to me that a technical college must have things like basic numeracy—basic skills.
>
> *Bret*: There's different approaches to that in our programs that offer Associate degrees. The general education requirements, such as English and math . . . are done through the community college. So those courses are no different from most college courses. Now there are some specific applications that are done at the college. For example, in the area of technical report writing, that is not a general education course that's at the community college . . . it's one that we have specifically to meet our needs. So that's an example. So we do both. And so, in some cases, it's our technical faculty that does the teaching of that because they have the background. But in the other areas it's the general education faculty, from our campus or from ([he community college].

Bret explained further that collaboration with the community college was part of an understanding within the state. When a technical and community college are co-located, the latter must provide the general education, and the former the technical aspects of programs. This rule points to the fact that, in normal circumstances, technical colleges are not viewed in the first instance as general education or basic literacy providers. But they have a respected tradition of making the close connection between general and technical skills (i.e., welding math, business English). That Redwood had such a tradition is evident in the following excerpts:

> *John*: Going back to basic skills and the curriculum area . . . I spent a little over fifteen years as a classroom instructor—the auto-body shop. And [in] the curriculum that I wrote, there were units that dealt with math. And I can give you some specifics. One would think that, well, you're going to teach spray painting. Well, it's not enough just to mix chemicals and adjust the spray gun. There's a whole set of materials that are developed to accompany it that dealt with weights, measures, and volumes. Because if you don't understand those things, you can't mix paints in the proper proportions.
>
> *Researcher*: In some ratio?
>
> *John*: Right. Right. And in the major collision repair, we were teaching measurements, and we're talking not only in inches but in the metric system. We're dimensioning. And also in the front end steering, basically what we're teaching is geometry, because it's all angles. So in every one of those modules that we developed for the curriculum, for those areas, there were math components. So we were teaching the occupational math in the context for the auto-body trade. And that is really the gist of the type of math when you talk about context. To me it's a very live, very real example.

Teaching ratios in the context of measuring paint and mathematics in the context of auto-body repair are unique pedagogical events that set vocational institutions apart from other institutions. This is quintessential functional context instruction, a defining capability and natural preserve of such institutions.

Curricular Philosophy

As indicated above, the grant proposal took the line of the mainstream literature on workplace literacy, citing the need to teach literacy in context. To do so required literacy audits, inclusive of the testing of workers, job analysis, task analysis, and examination of literacy samples. We were interested in hearing firsthand articulation of the philosophy of workplace literacy and examining how it became operational in practice. Here we relied on interviews with Redwood's project staff.

What Is Workplace Literacy?

The basic question, "What is workplace literacy?," needed to be asked of the project staff of Redwood in order to help us understand the philosophy brought by the institution to the project. The definition of workplace literacy is not without contention. For example, labor representatives are likely to subscribe to a more expansive definition than corporate representatives (e.g., Sarmiento & Kay, 1990). Some commentators have interrogated the dominant functional literacy paradigm, juxtaposing it against a conception of critical literacy (e.g., whole language, or Freire & Macedo's [1987] notion of reading the world and the word) that they believe is more likely to lead to worker autonomy, and to fuller participation in the democracy (e.g., Gowen, 1992; Greene, 1991; Hull, 1992, 1993; Kazemek, 1991; Resnick, 1990). These commentators tend to view literacy not as a set of skills to be learned but rather as a form of cultural practice. They believe that one is socialized into literacy practice through various forms of apprenticeship in institutions that include schools, family, community life, and workplaces. They remind us of the critical nexus between literacy and existence—that workers have an existence beyond work—as parents, consumers, and so on. The arena of debate, therefore, becomes (1) what should be the content of the workplace literacy curriculum, and (2) how broad its scope should be.

In *The Politics of Workplace Literacy*, a case study of African-American hospital workers (employed in housekeeping, food service, and laundry), Gowen (1992) points out the cruciality of literacy philosophy in determining curricular and evaluative issues in the project. She explains as follows:

> Margaret (a project consultant) holds the most influence in developing lessons and materials. She represents one perspective on workplace literacy. Her definition of the problem and its solution fit within the public discourse about workplace literacy. . . . Her goal is to help workers to develop the skills necessary to survive in the current system and to advance within it. On the other hand, Aisha (project instructor) holds a very different conception of the problem and its solution. As a social activist with a background in self-help models and Freirean study groups, Aisha believes that the system needs to be changed. She sees the goal of workplace literacy instruction as empowerment through the development of a critical consciousness in order to change the current social, political and economic system. In the middle and pulled in both directions for a variety of reasons are Noreen, Karen, Rose, Amanda, and Sarah. . . . These differences in the way the literacy problem is conceptualized by the various

> members of the project have a significant influence on the development and outcomes of the classes. (p. 22)

Gowen goes on to point out that a hope of the project staff was that the training program would help the hospital primarily, but would also transfer into other areas of the employees' lives, "developing self-esteem and creating initiative for more education and advancement" (p. 37). Gowen continues with the following:

> Thus, the King Memorial project is initially grounded in the belief that what is good for the employer is good for the employee—to be flexible, to define self in terms of work, and to seek advancement in the system. And if employees see personal value in this training, Margaret hopes that some of them will seek further education on their own time. What this story does not include is the possibility that employees might perceive their literacy needs differently—that they might believe that what is good for their employers is exploitative of them, or that the system might not be as open as Margaret believes it to be. (p. 37)

And, indeed, Gowen (1992) reports that the workers found ways to resist the curriculum, which had focused narrowly on their work tasks. One worker protested, "I don't want to know nothing about no mopping and dusting" (p. 93). Another reported that her favorite assignment was having to watch the movie *Raisin in the Sun* and to write a personal response. She took pride in that essay. Yet, project staff of opposing literacy perspectives had disagreed on the efficacy of that particular assignment in the context of a literacy program for cleaning personnel.

We surmised that how workplace literacy was conceptualized and defined by Redwood would dictate and guide its curricular and instructional actions. We expected, consistent with the project proposal, the curriculum development traditions of vocational institutions, and the stated preference of the U.S. Office of Education and its National Workplace Literacy Program auditors (e.g., Kutner et al., 1991; U.S. Department of Education, 1992), that the functional context approach would be uniformly approved.

Conversations

We asked Pete, curriculum specialist for the project, to tell us how he defined workplace literacy and to explain how that definition guided his curricular actions. Included in his answer was the following:

> When you're in a setting where people are doing a specific job, and they actually have a job, then you have to be much more specific. That's what I see is the difference between workplace literacy and training . . . and basic education. . . . It's organized towards some specific set of problems that people have to solve with that information. It's sort of like the example of a calculator. A calculator is only a tool towards solving some problems. You can focus on teaching people how to use a calculator or you can focus on the problems that they have that they use the calculator for.

Pete was drawing the line here between specific and general literacy, much like Sticht (1988, p. 68) does in his discussion of the issues inherent in defining illiteracy. This distinction between the specific and the general is central to the case for the functional context approach. Pete explained further that workplace literacy had to do with those prerequisite skills that enabled one "to do [one's] changing job."

> *Researcher*: OK. I think that's crucial. In other words, flexibility seems to be a big part of it. Are you flexible enough [to cope with change]?
>
> *Pete*: Yes, yes. And related directly to that is that the job characteristics are changing in such a way that they're now multi-tasking all these employees. Asking them to do many things out of the specialty area that they were trained in before, and therefore they can't keep up because they don't have the background in the five things they were trained in. . . . So it's the changing work environment that is creating some of the—what I am calling "literacy" problems.

To be workplace literate, then, meant being able to cope with impending changes in one's work environment and one's job. This way of conceptualizing literacy matched a human resource priority at the hospitals which was to create a multiskilled worker. The status quo was that workers specialized. In the case of food service workers, as Pete explained, one could be doing desserts, the other could be on the tray line, and so on. Now the hospitals were interested in cross-training. Pete explained further:

> Instead of having the kitchen person be the one who does the food, serves the food, brings it back, and the nursing assistant person be the one who measures the intake and output of who ate for the medical charts, and the environmental services people be the ones who come in and measure this and measure that, and clean the rooms and make sure everything is fine, now they want to assign a cadre of people to that unit and they do all those things.

Bret explained the college's perspective on workplace literacy:

> What we are saying [is that] workplace literacy is the basic level skills that employees need to be successful on the job. The traditional view of literacy has been a matter of reading, writing, and perhaps some math skills. And

> our definition was perhaps a little bit broader than that, but . . . it was geared to the workplace and the skills that employees need to be successful.

John responded with this characterization of how literacy ought to be considered in the context of the project.

> I think there's a common perception. It revolves around the word *literacy*. The perception is that when you hear the word literacy, or lack of literacy, in the case that we're dealing with, that we, many people automatically just assume, make the assumption, that we're talking basic skills, reading, writing, and math. But what we're looking at is the differential between basic . . . what we would call basic educational skills, reading, writing, and math, and the reading, writing, and math necessary to perform their jobs . . . my definitions have changed as we've gone through because it's emerging, and the last one that I wrote is "*using printed, written, verbal, and technology-based communication in a work-based context to achieve the goals of the work organization and the individual.*"

John went on to point out that at the core of the issue of workplace literacy is the need to cope with workplace changes such as new technology or new ways of communicating. The problem is external to individuals. It is forced by the dynamic character of today's workplaces. One has to keep up with the new knowledge and the new technology, or by default come to the condition of workplace illiteracy. He suggested that the solution is to acquire the disposition of lifelong learning.

Jane, a literacy specialist at Redwood, whose additional role was to publicize, organize, and implement the program, explained that the project was aimed at the 20% or so of workers who "can't quite understand the material that is presented through their job—the people that are having just a little bit of trouble with the reading, the writing, the math." According to Jane, while it was not a goal of the course to teach poor readers how to read, they were not turned away:

> We didn't turn anybody away. If someone came, and I don't know that anyone has come in the project that flat-out can't read anything—but we had some very low readers and we just helped them out. We helped them through it. But what I'm saying is, if we really had someone who couldn't read, the goal of the project is not to teach them to read. *The goal of the project is to help them out with their job, with this workplace and the application of the material that we have* [emphasis added]. But if we start them out as a rank beginner who can't read at all, we're not [going to] teach them to read. But they would still take the class, so we had, especially with our ESL people, people that did have difficulty. But they made it through. And they enjoyed it, and we gave them the help they needed. But it's not a *teaching you to read* class. Even the reading class was not a *teaching you to*

> *read* class. It was taking words apart and a whole different emphasis. [If] you couldn't read word one, this wasn't for you.

These four key members of the project staff had concurred in their conception of workplace literacy. To them, the core challenge for workers was how to cope with the changing work environment and their changing job-tasks. And for the bottom 20% or so of the workforce, this challenge was acute, particularly where their changing job-tasks required added increments of proficiency in job-related reading, writing, mathematics, or communicating. The conceptions they set forth were in tune with the mainstream discourse.

Differentiating Between Workplace Literacy and Training

As alluded to above, one of the challenges for the project staff that was imposed by the grant was to differentiate between training (which would be the responsibility of the hospitals and beyond the scope of the grant) and workplace literacy. This was not an easy separation for project staff to make, since training problems that result from change fitted with their operative definition of workplace. Furthermore, responsibility for dealing with supposed illiteracy in the workplace falls to training departments. The difficulties the project encountered here are captured in the following excerpt:

> *Jane*: Because we were careful that we're not offering training courses, we can't just offer classes in learning how to do the math for a specific thing because now we're training people. And the grant is very sensitive about training people. If everyone can't make this, (or) do this math formula, then that's a training issue. It's not a workplace literacy issue.

What Jane was saying here speaks of a fine separation indeed. The teaching of mathematics related to a specific aspect of work was a training, not a literacy issue. But the teaching of workplace mathematics in a general, decontextualized sense wasn't. And indeed, when mathematics was taught in the project, the disposition was to decontextualize and to cluster skills across jobs rather than specialize within jobs.

Curricular Approach

The grant proposal set forth the view that "training must be derived by way of direct identification, observation, and validation by workers and supervisors" (p. 18). Needs assessment strategies inclusive of task inventorying, job analyses, interviews, and observation of samples of literacy materials related to the job were promised, leading to individualized and outcome-based curriculum design. Specific project tasks set forth for Redwood included

> [(a)] development of curricula (organized in multiple self-paced modules); (b) editorial review of these training resources by the project steering committee, workers, hospital representatives, and others; and (c) field tests and evaluations of the training materials.

We were interested in examining this approach closely.

Actual Approach

This section deals with how the workplace literacy philosophy articulated by project staff was actually translated into curricular actions. It is based on a combination of interviews with college project staffers, hospital representatives associated with the project, union administrators, and inspection and analysis of project curriculum documents. Because curricular approach is so much a part of the unique claims that a technical college can make about its suitability to conduct workplace literacy programs, we allow college project staffers to speak at length in their own voices in this section. For triangulation purposes, their comments are juxtaposed against that of hospital representatives.

The basic curricular approach adopted by the college was consistent with functional context theory as articulated by Sticht, Armstrong, Hickey, and Caylor (1987) and as set forth in the prescriptive works of Phillipi (1988) and Cornell (1988). Central to the approach was collaboration between workers and their representatives, managers and supervisors, and project staff. The project curriculum and literacy specialists conducted on-site needs assessments by interviewing workers, supervisors, and managers and by shadowing and observing workers as they performed their tasks. Data so gathered was later verified or clarified through further meetings. Some workers were voluntarily tested to determine the reading level to which project curriculum materials should be aimed.

The curriculum development process was as much political as it was technical. Our inspection of the records of the project staff revealed that they had organized several joint meetings at the hospital, which were designed to get consensus as to what were the problems that needed to be solved. Excerpts from interviews with Redwood project staff provide the flavor of how the needs assessment leading to the curriculum was approached.

John: The approach that we've taken is that when we enter into a project or when we develop curriculum, we are not going to buy anything off the shelf. That's the attitude that we go in there with. Because every workplace is different. What we do is truly customized to that work environment. I can give you some good examples in the hospital project. As we developed the curriculum, we found common needs that could be presented in all four hospitals, that being the modules that dealt with [measurement and mathematics] basically. And we taught basic math skills by using the measurements that they would use on the job—to . . . the custodial maintenance group . . . the nursing assistants group, and . . . the dietetic technicians group. . . . And those were pretty consistent across the hospitals—those needs. When it came to the written communication part of it, and also the part of it that was [human relations] "Understanding Where You Work," we had four unique organizations. So really . . . we had a module written for that written communication, that's the "Writing That Works" module, and the "Understanding Where You Work" modules. We had to do four hybrids. We had the framework. But we had to custom tailor it, the curriculum model that we developed, we had to further customize it to an additional level for each one of the four worksites. *And we use the materials that they used daily in their jobs* [emphasis added]. They're the materials that these people saw every day, they handled every day, but they never really understood. And it gave, as Bill said, it gave meaning. It kind of, it brought their job alive.

Researcher: Now . . . that customizing, is that a part of the tradition of the tech college and the way in which you would do business anyway?

John: Yes.

Researcher: . . . that if an employer calls you . . . You would go in and see what it is, whatever their occupation is, and then you would work backward from that?

John: Yes. It has to start—the whole process has to start with an evaluation of the workplace, to see what the processes are. And we approach it from the aspect of what things cause you the most problems. Or as Pete [curriculum specialist] would say, where's the pain? What's causing you pain in your operation?

Researcher: So in other words you haven't had to go and learn that part of it. That, in a sense—that has been traditional . . . this idea of going into a company or going in to talk to any client and figuring out what the client needs and then working back . . . that's sort of the way in which you do business?

John: Absolutely . . .

Bret: It's also the background that the technical colleges have, even in regular programming. When we do any kind of a new program we have to go and talk . . . deal with an advisory committee. . . . Even though it's off the shelf [the curriculum], there's still a history, and a background of getting information from the field.

> *John*: The whole system I think—the technical college—whether you're dealing with our day school classes or customized classes or customized training, is really user-driven. And it's needs-driven. By the need of the industry, or in the cases that we're dealing with workplace literacy, by the need of the individual workplace.
>
> *Researcher*: So in a sense all you have to do here then, because you already have the, shall we say, technology, to go out there and figure out what it is that this workplace or this individual or this whole group needs, and you could just simply ask the literacy question to the extent that that's what is needed in addition to the other things, without missing a step. Because you already know how to do that. . . . Is that about right?
>
> *John*: Yes, in a general sense. If we go into the worksite and we're in this discovery process, that's really what it is at first. You're trying to discover exactly what the needs are. You look at many levels. You can't ask just the manager, because all you are going to get are some of the right answers . . . You also have to ask the individual who is at the hands-on level, or production level out on the floor what the problem is also. And you'll find invariably that perceptions are different as to what the needs are.

What these project staffers were saying was that their traditional needs assessment technology now served the college in good stead when they performed literacy audits. The basic mechanism of determining the nature of the problem, and designing curriculum to remedy it, was virtually the same.

We asked Pete to provide specifics, as he reflected on his needs assessment processes. The dialogue that follows provides insight:

> *Pete*: We have to spend some time telling them [workers] what we're going to do with them first. In other words, we have to explain that we're looking for the pain. . . . We have to make it real clear what we're doing and what we want them to help us to do. And then once that's clear [we ask] what are the problems, and that's a questioning process. What is it about your job, for example, that you find most difficult to do? We don't say, "Can you read well, can you write well?" None of that. . . . You get them talking and the listening starts to accumulate.
>
> *Researcher*: So you zero in?
>
> *Pete*: . . . we don't want to know all the things that are involved in doing their job.
>
> *Researcher*: You don't do a task analysis?
>
> *Pete*: Well, it's a task analysis for the problem, but we don't do a job analysis.

> *Researcher*: You don't do a job analysis for the whole job? . . . You zero in on the problem?
>
> *Pete*: We're looking for the performances that they can't do as well as they should . . . the specific performances . . . measuring the recipe that is for 100 people and I need it to change to 350.
>
> *Researcher*: If you do it that way, how many people would you have to [interview] before you know that you had captured what the range of the problem is?
>
> *Pete*: Well, what we do is we get as many of them as we can get to talk to. . . . We go back there until we can get a list to give back to them and say, "Is this it?" I mean, "Is this all of what you had, or is there more? Did we describe it right?" So we reflect back what they have told us. And then they sign off on it and say, "Yes, that's it. That's all we've got . . . "

Pete continued, explaining that aside from workers, it is necessary during the needs assessment phase of curriculum development to involve management.

> And when we talk to management, that is the top management, we start out at the Vice-President level, whoever will come and listen to us. And then we work down to the managers and supervisors of these people and then we actually talk to the people themselves. . . . Sometimes we've talked to the managers and the people together, sometimes we talk to the people separately. A lot of it at that point is just me not being satisfied that I know enough. And so I'll schedule another meeting with an individual person or a group of people or a supervisor or somebody and say, "I don't understand this." And then we reflect it back to them. That's the key to the whole thing. We say, here is your opportunity to tell us whether we did this right or whether you want to add something because at this point we're not going to do anymore with the needs analysis. Then we'll design the curriculum.

The approach described by Pete here was internalized by hospital representatives associated with the project, as the following excerpt from an interview with two of them (Carmen and Melinda) attest:

> *Carmen*: The people who were doing curriculum development were working as fast as they could work. . . . [They were] trying to coordinate four hospitals . . . commonalities are not great. And so they had to come in and do the needs assessments.
>
> *Melinda*: [They were] very responsive. They did a heroic effort at touching base. They sent surveys to the managers, they gathered tools from the hospital, you know, forms that we use and so forth.
>
> *Carmen*: They went into the settings . . .

Melinda: They did personal interviews; they were here on-site many times. So they really did a heroic effort.

The approach was also internalized by union officials who spoke of the "very intricate skills assessment" performed by the college's curriculum development team.

Document Examination

To gain another perspective on the curricular procedures adopted by the college, we examined project documents and notes from minutes of meetings (from among the key stakeholders) that pertained to curriculum development. The documentation revealed that the first step taken by the college was to set forth a plan for the curriculum development process (e.g., Table 1). The first three steps, (1) "conduct needs/task analysis," (2) "finalize task listing," and (3) "sequence and modularize tasks," were probably the most crucial and certainly the most political, requiring the consensus of the collaborating parties. We will focus on these three.

Needs Analysis

As shown in Table 1 and as discussed previously, the needs assessment process included interviews with job supervisors, training directors, and selected employees. These personnel were urged to consider eight specific questions as they considered the literacy needs of their workers:

1. What specific job-tasks do 80% of the employees perform effectively where *20% of your employees just can't seem to do it correctly*?
2. What specific job-tasks do some employees have trouble performing which may be the result of some *new technology changes* in the workplace?
3. What specific job-tasks do some employees have trouble performing which may be the result of their lack of *basic math skills*?
4. What specific job-tasks do some employees have trouble performing which may be the result of their lack of *basic reading skills*?
5. What specific job-tasks do some employees have trouble performing which may be the result of their lack of understanding of how to relate to *patients* effectively?

Table 1
Curriculum Development Process—Hospital Project

Steps	Tasks
I. Conduct needs/task analysis.	1. Review job descriptions. 2. Create interview instruments. 3 Interview job supervisors, training directors, and selected employees from each job position. 4. Conduct selected on-the-job observations. 5. Develop profile of target audience. 6. Prepare first draft of task listing.
II. Finalize task listing.	1. Review task listing with industry personnel, including target audience. 2. Identify task priorities. 3. Revise task listing based on review.
III. Sequence and modularize tasks.	1. Plan modules and order of instruction. 2. Review with industry personnel. 3. Finalize modules and sequence based on review.
IV. Develop plan for each module.	1. Create objectives and draft outline for each module.
V. Decide sequence of development.	1. Create development schedule with target timelines.
VI. Review sequence of tasks with industry consultants.	1. Provide copies to consultants for review. 2. Discuss content with consultants. 3. Finalize sequence of tasks based on review.
VII. Locate appropriate available resources.	1. Research content as needed. 2. Locate resources.
VIII. Develop drafts of selected modules.	1. Develop content of selected modules. 2. Develop instructor's guides.
IX. Review modules with consultants.	1. Provide copies of draft modules to internal and external consultants for review. 2. Meet with internal and external consultants to review draft modules.

Table 1 (continued)

Steps	Tasks
X. Revise modules for field test.	1. Revise modules based on review. 2. Prepare module copies for field test.
XI. Develop field test modules.	1. Conduct field test. 2. Evaluate module effectiveness.
XII. Develop final draft of modules.	1. Revise modules based on pilot test. 2. Prepare masters of modules for production.

6. What specific job-tasks do some employees have trouble performing which may be the result of their lack of understanding of how to relate to *customers* effectively?

7. What specific job-tasks do some employees have trouble performing which may be the result of the lack of understanding of *spoken English*?

8. What specific job-tasks do some employees have trouble performing which may be the result of their lack of understanding basic *medical terminology*?

We examined the minutes of meetings with personnel from separate hospitals, showing the responses of these hospitals to some of these questions. The minutes show that for one hospital the problems included the following (set forth by department):

Environmental Services

- reading chemical labeling in order to get each chemical into the right bottle (some are color coded but some employees are color blind)
- measuring skills for proper dilution of chemicals
- reading supply order slips
- reading signs in hospital including various danger signs for certain chemicals
- reading and completing time cards properly

- understanding verbal orders
- completing the six-page self-performance appraisal (mostly an ESL problem—variety of languages range from Ethiopian to Lebanese)

Nutrition Services

- reading and understanding job procedures such as menus and the production sheet for proportions
- understanding how each part of a job fits with the rest
- reading recipes and measurements

The minutes of meetings at a second hospital revealed areas of concern to be medical terminology, ESL, reading building plans, following verbal instructions, and mixing chemicals.

Minutes from one other hospital identified recent computerization of certain hospital operations as a problem area. A further problem area was "how to relate to patients." At this hospital a problem among cooks was making conversions between metric and imperial measurements. This hospital was moving toward multitasking, requiring workers to be able to understand both systems.

Minutes from yet another meeting showed employee problems such as the following:

1. understanding instructions given by supervisors
2. needing to understand the layout of the hospital—to get from one part to the other
3. reading labels
4. relating well to patients when entering a room in order to clean
5. communicating well verbally
6. communicating well on paper in tasks such as completing incident reports, grievances, and performance appraisals
7. following the procedure for mixing cleaning chemicals

As indicated above, while there were hospital-specific problems, there were others that transcended them. It can be seen that the problems articulated by the departments focused on workplace basic skills as set forth by Carnevale et al. (1988) and in the SCANS report (1991). From the milieu of problems revealed by the needs analysis process, the curriculum specialists at the college developed the following six courses: *Working With Others*, *Reading on the Job*, *Measuring for Success*, *Writing That Works*, *Getting Computer Comfortable*, and *Understanding Where You Work*. Table 2 (e.g., Appendix C) provides sample content items for each of these courses. It can be seen from the table that the content was decidedly workplace-related and specific to the circumstances of each of the hospitals. Taken together across the courses, the content was consistent with conceptions of workplace literacy one sees in the literature. The course *Working with Others* emphasized interpersonal and communications skills. Content here included (1) "answering telephones appropriately," (2) "communicating appropriately with patients," (3) "behaving properly in elevators," (4) "working as part of a team/listening skills," and (5) "using good listening skills." The course *Reading on the Job* emphasized both "reading to do" activities (e.g., reading food labels or reading supply order slips) and "reading to learn" activities (e.g., understanding the relationship between calories, fat, salt, sugar, and cholesterol in food) (e.g., Sticht, 1978). This course will be discussed further when we examine each approach to instruction.

Measuring for Success was what the curriculum developers titled the course in basic mathematics in order to try to reduce math anxiety among workers. The content of this course included skills such as (1) "taking food temperatures," (2) "estimating when product will run out," (3) "mixing chemicals for cleaning solutions—changing proportions of chemicals," (4) "reading instrument gauges," and (5) "completing time cards effectively."

The course, *Writing That Works*, emphasized skills such as (1) "writing basic reports"; (2) "writing correct messages from telephone calls"; (3) "requesting changes in trays and diets for patients"; and (4) "writing basic memos, incident reports, and grievances."

Multiskilling

As indicated in our discussion of curricular philosophy, Pete had explained that a goal of the hospitals was to create a multiskilled worker. Rather than specializing in one aspect of service, each worker in a particular unit would perform several functions. As Pete pointed out, the hospitals were saying the following:

> We want to organize the workforce by [units]. . . . So instead of having the kitchen person be the one who does the food, serves the food, brings it back, and the nursing assistant person be the one who measures the intake and output of who ate for the medical charts, and the environmental services people be the ones who come in and measure this and measure that, and clean the rooms and make sure everything is fine, now they want to assign a cadre of people to that unit and they do all those things. And it's just a simple example of the change in the job that prevents people from keeping up because they don't have the prerequisite skills to do all that.

This problem fitted the description of what Pete had described as workplace literacy. The jobs of these workers were changing. We wondered whether the functional context approach was applicable here as well. Could the functional context approach lead to a curriculum geared to multiskilling?

> *Pete*: I can tell you how we do it. If you're mopping floors and that's your job, the first thing we do is to find out what problem areas you have in mopping floors. And there will be areas like mixing the chemicals properly to mop the floors. OK. Then that is a job function, mopping floors. And then we find some other things that you don't have the prerequisites for. So we start with where they are on the job, find out where the needs are there and then [ask], "What else do you do in your job that you're having problems with?" And then we go beyond that and ask, "What's coming down the road?" "What are they going to introduce, what kind of technology?" Anything that's going to be introduced in six months, a week or whatever, in your hospital that is going to change your job and in some cases, prepare for that change. Computers is an example. So we start with where they are and the job they do, find out what the problems are, and expand that into the other.

There was consistency here, from curricular philosophy to curricular approach. Literacy meant the ability to do one's changing job, and the task of the curriculum specialist was to find out what these changes were and to design a curriculum that would ready the worker to perform under these changes.

Clustering

As described above, one curricular challenge of the project was to fit individual workers so that they could perform multiple jobs. A corollary challenge was preparing workers from a variety of jobs to perform common tasks. The solution here was to decontextualize the curriculum so that tasks that transcended jobs could be pooled.

Measuring, communicating, and working with computers were examples of such tasks. The approach was to cluster them into topics, as the following dialogue shows:

> *Pete*: The union groups represent four, five, or six jobs that are sort of parallel—environmental services . . . clerical people . . . nursing aides. . . . So those are potential lateral areas. So what we do is we go find out what they all need and then we look at them and we say, "We've organized the curriculum around a topic area." So lets say "measurement." We found that all these groups needed some kind of measurement. So we designed the curriculum to be measuring for nursing assistants, measuring for dietary aides, measuring for environmental services. So if you're now a nursing assistant and you go into this class, you're going to measure chemicals in the class, with the idea that you don't do that on your job everyday but you may be doing it and you may want to be doing that or you may have the opportunity.
>
> *Researcher*: So what generic stuff, what transfers or transcends all of these areas?
>
> *Pete*: In the examples we use, then, for teaching each of those things, are the actual things they do on the job.
>
> *Researcher*: That cut across the three or four things . . .
>
> *Pete*: So let me sum it up a different way. Say, we interviewed Nursing Assisting, Environmental Services, and Housekeeping and we found these five calculation kinds of problems they had in one area, and these four kinds of calculation problems in another area . . . [we] looked at them and figured out a way to organize them into one training course. So any one of those members of those three groups that takes the course will get experience in the kinds of measuring that is done in the other jobs. But there are still the problems that they have on the jobs that become the content . . . the actual forms, the actual calculations, the menus. We took menus . . . right off their menus, and used those as the content of the training. So that's context-based.

Testing

To pitch the curriculum to the reading level of participants, a section of the Test of Adult Basic Education (TABE) (e.g., testing vocabulary and reading comprehension) was administered to a sample of workers on a voluntary basis. Jane expressed the view that the reading levels encountered ranged between the seventh and ninth grade.

Literacy Beyond the Workplace

Though workplace literacy had to be tightly defined, project staff indicated that they were mindful of needs beyond the workplace. Pete pointed out that "a secondary goal" of the grant was "a general overall improvement of the person's life, personally as well as professionally." The curriculum had to take this goal into account, since it was to be a point of evaluation. He provided an example—the use of calculators—indicating how the curriculum development process met this goal:

> *Pete*: Using the calculator was a perfect example of that. You can do mathematical calculations without a calculator . . . but a calculator is a part of these people's lives and their kids are using calculators. Somebody, as a result of our course, [may] be able to go back and have a conversation with their own child about computers, that they now understand is going to improve their lives and their families' lives as well. And that was one of the underlying goals of how we tried to proceed.

As we suggest in our earlier examination of the definition of literacy adopted by the project staff, when taken from the perspective of the worker, literacy must move beyond the functional. In the case reported by Gowen (1992), it was shown that workers often might prefer a curriculum that extends beyond their jobs. Pete was saying that such a consideration was indeed a goal of the project—a secondary goal—one that had to be taken into account in considering the curriculum. We engaged him in further dialogue on this point by expressing a value:

> *Researcher*: Literacy ultimately must mean what you just said there—an improvement in one's life and being, and so on. [This is] one of the reasons why I am looking at the functional context—although you've discussed functional context in a very liberal way that I'm OK with. You're talking about mobility and so on and not "fixed." One of the things that I think that literacy must do for somebody is improve their life—make them freer and freer to move, and so on. So I am happy to hear that sort of thing is in there [Note: in the approach to curriculum].

Pete replied that many would consider the course, *Working with Others*, one of the six developed for the project, to be esoteric and not within the realm of workplace literacy. But he pointed out that the aim of that course was to

> primarily work on building [the workers] self-image—their ability to stand up to a supervisor and assert themselves when they should; their ability to accept criticism when they should; their ability to interact with their fellow employees and their management people.

What Pete was saying here was that a residual effect operated in the curriculum, redounding to the intrinsic benefit of workers. Assertiveness on the job could transfer into assertiveness off the job. As Gowen (1992) points out, the premise of residual worker benefit is integral to the mainstream conception of workplace literacy. What is good for the employer is assumed to be good for the worker.

Dealing with Workplace Basics

The problems identified by hospital personnel during the needs assessment phase of curriculum development were elemental. Workers could not read charts and signs indicating danger, menus, and so on. They had difficulty filling out forms and writing reports. These were general problems, not attributed to particular workers. The curricular and instructional solution adopted by the project was to provide heuristics that would make workplace-specific reading, writing, math, and other basic skills tasks more easily comprehensible. The following excerpts provide insight into how basic skills were treated in the curriculum:

> *Researcher*: How, if at all, do you deal with . . . reading problems, writing problems, and so on?
>
> *Pete*: We . . . do a sampling of the people that are going to receive the instruction as to reading level. And then we design the curriculum . . .
>
> *Researcher*: You test them? What do you do?
>
> *Pete*: Yes. . . . So we get a general idea of what level the group is reading at, and then we design the curriculum to match that level. Now related to your other question . . . how do you do the basic writing and so on. If we discover in the needs analysis that writing is a problem that they have on their jobs, we design a writing component . . . where they write the things they write on their job.
>
> *Researcher*: . . . functional?
>
> *Pete*: [Yes]. So, we're doing writing, mathematics, computers, reading, doing all four of those things. But we are not doing it from the point of view of trying to raise their reading level generally. We're doing it by finding out what they have to read.
>
> *Researcher* [paraphrased]: You're not going to try to raise their reading level?
>
> *Pete*: We walk in and we say we're not gonna attempt to raise people's reading level. What we're gonna do is give them a methodology for

> approaching problems . . . ability to read what they read. . . . If they [want to] do GED classes . . . we offer referrals . . . and the Union Educational Bureau, by the way, will pay for all that.

Instructional Strategy

In discussing the instructional approach adopted by the project, we focused on one course, *Reading on the Job*. We decided to discuss one course rather than all six because of the basic symmetry in approach to courses taken by the project. Reading was chosen because of its centrality to the discourse on workplace literacy and because it is a nontraditional program area for vocational institutions—one for which they are likely not to have much programmatic and instructional experience or expertise. The course overview for *Reading on the Job* is shown in Appendix A.

As for other courses, the project staff developed learning modules for each participant along with a corresponding instructor's guidebook. The modules set forth a four step checklist—define, plan, read, and check—to the decoding of reading materials found in the workplace (e.g., Park, Olson, & Oldham, 1991). Reading in the workplace was characterized as a task which can be approached systematically. The reader first *defines* the reading problem by asking questions such as, "What is the purpose of my reading?" Next he or she plans a solution to the problem, by asking, "What information do I need?" The next step is to read. This requires asking, "What cues does the format suggest," or "What do I already know about the situation that can help me?" The final step is to check, that is, to ask the question, "Did I accomplish what I wanted?" Appendix B shows an example taken from the module. Using the four-step approach, the trainee would have to solve the reading problem posed by this breakfast menu. To read this menu, the trainee would have to identify *format cues* such as bold letters, capital letters, highlighted words, and words that appear at the top of the page or are set apart.

In the instructor's guide designed for the course, the problem-solving approach as described here was described as being robust enough to help the worker approach *any* reading task. Pete expressed the view (about which we remain unconvinced) that the technique was transferable into areas of reading beyond the functional (e.g., reading the daily paper). He explained as follows:

> The way we approach reading, when they get done with our reading course, they're [going to] be able to read the [local paper] better. Because what we've taught is things like functional cues. If something is in bold, something as simple as it's in bold, it's probably a quick summary of what's underneath it. The thing that's in the first paragraph usually is a summary of what's gonna follow. You know, things like that are part of the reading class . . .

We thought that what Pete was describing here required the assumption that one was already a fluent reader. Picking up surface features of the text as cues was efficient when one could already read. But such features would not make text any more penetrable for a poor reader or a nonreader.

Responding to a query about the nature of the compensatory devices he was describing, Pete explained as follows:

> We call them contextual cues. . . . An example, a concrete example. You've got a paper in front of you that you can't read. And what it is [the one we use in class] is a hepatitis [I think it's a] declination. . . . Where you sign this, and you have said that you won't take the free hepatitis vaccination. These people pick this up, and they look at this thing, and it's got all these medical, technical terms about hepatitis-B and AIDS and all kinds of things. So we teach them this, look, where's the top of it? In big letters. Hepatitis [declination] . . . what's that mean? I don't know. OK. But it's important, you know that. So you can ask somebody that. Now what's on the bottom of it? Well, it says signature. What's that mean? It means I have to sign. Oh, if you have to sign it it's important. OK that's a cue. . . . Now, what's underneath that? Oh . . . a witness. Oh. You have to sign it and it's witnessed. This is *really* important. So don't sign it until you understand it. And then we try to teach them how to understand it, but you can read it and I can read it. I can't understand it. It's legal stuff, you know? So, go ask somebody. Ask somebody who can give you the answer that you're satisfied with so you know what you are signing. . . . And that's functional literacy, as far as I am concerned. Now you take that back to a context of your income tax, or the [local paper] or whatever, and there are some cues in there that you are finding out. The titles, for example, how things are put in paragraphs, what a first paragraph does and all that kind of stuff . . . translate into a lot of other kinds of reading.

While cues do have their place in reading instruction, as we shall be discussing later in this section, we have found no support in the literature for their use as devices that poor readers or nonreaders can employ on their own to improve their understanding of unfamiliar text, or to effect transfer across text types.

Beyond the use of cues, the workers were taught how to recognize words by analyzing their structure (the focus here was upon prefixes, suffixes, roots, and compound words). Words chosen were workplace related, including medical terminology. Workers were required to complete an exercise illustrative of mastery of the ability to analyze the structure of five words, namely *subsections*, *semiannual*, *bimonthly*, *interdependent*, and *prepare*. This exercise also required them to figure out the meaning of two compound words, namely *outlook* and *overnight*.

Instructors

To complement our understanding of the approach to instruction taken in the project, we interviewed four of the instructors, including one who had much responsibility for teaching the reading course. The instructors were involved in continuous improvement of the courses as the program progressed. Fundamentally, they were expected to follow the basic instructional design set forth in instructor guides and corresponding learner modules. They could interpret and adopt the curriculum as they saw fit, but so far as was evident, there was no material deviation from the basic plan that we could discern. All students were required to take a common postcheck to indicate course mastery. Since it was the instructional materials (e.g., learner modules and instructor's guides) prepared specifically for the course that were eventually going to be disseminated for their demonstration value, they were more the focus than instructor variation.

For the two instructors who ordinarily belonged to the college staff, we were especially interested in whether there were aspects of that role that served to advantageous effect as they taught project classes. For one instructor, prior experience in delivering on-site instruction within a firm was helpful. For another, it was having to deal with special education students, who require patience and individual attention. One theme that seemed to be common in the approach taken by the instructors was that they tried to teach in a way that was nurturing and anxiety-reducing. To this end, the primary strategies they adopted were cooperative learning and self-pacing. In a small number of cases, they allowed workers to test out of courses. This was an important concession, since there was some evidence (gleaned from interviews and from course evaluation sheets) that some fraction of the workers found the content to be too easy for them. While their focus was essentially on work-related examples, the instructors pointed out that workers were equally likely to bring examples from home as they would from work.

Discussion/Reflection

How efficacious was the philosophy and approach of the project with respect to reading? To come to terms with this question, we set the instructional approach against the backdrop of a bipolar conceptual framework, consisting, on the one hand, of a conception of reading as specific literacy (reading for useful purposes) such as reading at work, and, on the other, a conception of reading as general literacy (or school literacy).

Specific Reading

Resnick (1990) identifies *useful literacy* as one of six forms of literacy practice. This form of literacy involves "the use of written texts to mediate action in the world" (p. 172). It includes "reading recipes, following instructions for assembling or manipulating equipment, and consulting bus and airline schedules" (p. 173). The reader has "immediate goals" in mind, and assumes that the text "is authoritative and can successfully guide action" (p. 173). According to Resnick, the nature of the reading process is shaped by the "action-oriented stance" of the reader. Successful readers can "relate each proposition in the text to a specific set of physical objects, and plan actions on them" (p. 173). Physical objects such as diagrams are enablers.

Dealing with the question of how a person reaches this level of literacy, Resnick suggests that cognitive apprenticeships in the family are conceivable. Children practice along with other family members. Later, they develop these skills in extra-school activities. They make the *read-do* connection. Some types of school activities (e.g., science labs and vocational classes) enhance it. Resnick notes:

> If functional literacy practices are learned mainly outside school, however, certain students—those from families who do not practice much literacy in the home or do not engage their children in such activities—can be expected not to learn them. (p. 176)

What Resnick does here is posit a socioeconomic prerequisite for the learning of useful literacy. The learning of this literacy is mediated by the type of family in which one grows up. If that is the case, then it constitutes one constraint on attempts to teach workplace-related reading such as the hospital project was attempting. The skills that workers lack should perhaps have been acquired long ago, premised on a foundation of literacy learned in the family and nurtured at school. There is no real substitute for this grounding—no quick way to remedy it.

Diehl and Mikulecky (1980) make some of the same observations as Resnick from their vantage point of workplaces. Their research indicated that about two-thirds of the reading tasks performed at work are *reading-to-do*. Text serves largely as external memory upon which workers rely as they perform tasks. For example, a worker may consult a manual in order to adjust a machine. The manual remains accessible. Reading often is not integral to task performance, but workers capitalize on the fact that materials are available in their environment. It seems as though a good strategy for workplaces would be to make their work environments more information-rich.

As Resnick points out, Diehl and Mikulecky (1980) noted that increasingly workers had "extra-linguistic cues" in their work environment that were directly related to their jobs. They needed to make the connection between the text and their material environment: "Once the correspondence between the print and environment is understood," it becomes easier to extract information from text (p. 225). Diehl and Mikulecky contend that workers are able to read work-related information at about two grade levels above their assessed reading level. They concluded that reading at work differed from reading at school, in terms of cognitive gain and extralinguistic cues.

General Reading—Or Reading at School

General reading, or reading at school, provides the second pole as we reflect upon the instructional approach of the project. How does specific reading such as in the context of workplaces, differ in character from more general reading? We can understand this better by examining how reading at school is approached.

According to Durkin (1983), the factors that are known to contribute to reading ability and which teachers of reading should strive to enhance are (1) extensive sight vocabularies—that is, a repertoire of words that are automatically recognizable; (2) the ability to figure out words independently—that is, the ability to decode new words without outside help (requiring that teachers be knowledgeable about phonics and word structure); (3) vocabulary and word meaning development (requiring constant additions to the sight vocabulary); and (4) the ability to comprehend connected text, requiring instruction that balances text-types—that is, instruction that includes narrative discourse (story-telling), expository discourse (explanation), and procedural discourse (how to bake a cake). Durkin suggests that the materials supportive of successful reading instruction should include "anything that displays print . . . textbooks, library books, magazines, comic books, signs, labels, menus, calendars, newspapers, billboards, stamps, greetings . . . " (p. 6). (This liberal conception of what constitutes appropriate reading materials is, of course, quite different from the functional paradigm's more restrictive definition).

Because of its centrality to literacy, general reading proficiency is one of the cornerstones of the socialization process in the United States, as it is in most cultures. The process of becoming literate in reading is time-consuming, and must proceed from one's earliest formative years through the school years. Those who fail to acquire this literacy by the adult years become handicapped. The competencies they have missed are not easy to retrieve, nor are they easy to substitute. Workplace literacy programs are useful, but unless they provide generous amounts of instructional time and are broadly conceived, it is doubtful that they can imprint upon general reading literacy.

Efficacy of the Project's Approach to Reading

Having briefly explored the nature of reading in its general and specific aspects, we became better situated in order to estimate the efficacy of the project's efforts with respect to an approach to reading instruction. A first requirement is to characterize what the basic objective of the project was regarding reading. From the minutes of meetings between project and hospital staffs, it appeared that the initial problem was that some workers had difficulty reading work-related documents (e.g., signs indicating danger, menus, and so on). From the instructions in the instructor's guide to the reading course, the project stance was not to try to raise the grade level reading score of workers. Rather, it was to improve the on-the-job reading skills of participants via the problem-solving method described above. This approach was stated in the instructor's guide to be capable of preparing one to approach any reading task. Further, it was expected to help workers "to increase their confidence to seek out and understand the actual kinds of reading material encountered day-to-day on the job." Since, as indicated above, the project staff did not establish tightly controlled empirical measures to ascertain gain, we have focused not on outcomes but rather on approaches.

In pursuit of its stated goals, it is evident that the project adopted *both generic and specific* reading strategies. Practical strategies (such as reformatting the text) designed to help participants read menus and forms were intertwined with school-like strategies (the teaching of structural analysis of words—that is, prefixes, suffixes, roots, and compound words). To teach the skill of structural analysis, the word *transport* was examined, chosen for a functional reason—that it had to do with moving patients within the hospital. The meaning of the prefix *trans* was given, as well as that of the root *port*. The module suggested that breaking a word such as this into component parts would help reveal its meaning, which would be clarified when the word is used in context.

While it is important for workers to understand word structure, it was questionable whether such an approach could be viable within the narrow confines of a work setting. More promising might have been an approach that was closer to traditional vocational pedagogy—that is, one that matches the printed word with some practical action. The *read-do* connection needed to be made (Diehl & Mikulecky, 1980; Resnick, 1990). It is unlikely that the word *transport* was unfamiliar as a spoken word to any of the workers. They would all have known its meaning. Some probably could not recognize it in written form, and for these the question is which was the more appropriate instructional strategy—linking the written word with the act of transporting a patient (or more broadly, transporting goods by train or trucks), activities within the experiences of workers, or teaching them its etymological roots via structural analysis. The latter approach would be valid if the intent were to show the word *transport* as belonging to a class of words (*transmit*, *transfer*, *translate*, and *transact*), and as a way to build vocabulary, but would have precluded sole emphasis on workplace-related vocabulary, a disposition which would have been inimical to the project philosophy.

Our discussion here points to difficulties inherent in trying to utilize school-like techniques within a functional context frame. Teaching literacy for transfer requires its own space, time, technique, and philosophy. One important requirement would be that the examples extend beyond the workplace into other facets of the workers' experiences.

Another example of combining school-like reading literacy strategy with the functional was evident in the emphasis on so-called *contextual cues*—surface features of text inherent in the text format (e.g., use of bold type). In the context of the project, these cues appeared to be intended not necessarily as an aid to reading comprehension but often as a way to determine the importance of a document whose content one was unable to read (e.g., a hepatitis declination form—exempting the workers from being voluntarily tested for hepatitis). Conceived in this way, use of functional cues would leave unattended the underlying problem behind poor reading. The act of picking up the text—which is important merely from its surface features—is, by itself, not reading. When discussed in the literature, contextual cues are conceived somewhat more broadly than was the case in the project—not as ways to compensate for poor reading ability, but as ways to enhance reading comprehension.

In their discussion of instructor-reader interaction strategies, Singer and Donlan (1989) explain that surveying the title and main headings is a way to help students read expository text. But their intent goes beyond the functional. They do not posit the reading of main headings as a way to determine the importance of documents which one is otherwise unable to read (as in the hepatitis declination case). Rather, what Singer and Donlan propose is a dialogue between instructor and student involving prediction and verification of the content of text. Students must make predictions about the rest of a story by reading the main heading, or by reading the material in the first part of the story, and then they compare their predictions with their actual reading, followed by a discussion of which clues from the text they utilized to make their predictions (p. 159). Students must come to understand how to make use of cues. Use of cues in this way is viewed as a metacognitive strategy, not as compensation for an inability to read and to comprehend.

While the project emphasized format cues only, other contextual cues that are mainstays of reading instruction could conceivably have been employed. Contextual cues, more broadly conceived than they were in the project, are a counterpart of structural analysis, employed, as Durkin (1983) suggests, to help with the problem of figuring out words independently. They are considered to be supplementary to phonics and to structural analysis (e.g., prefixes, suffixes, roots, and compound words). Local context is recognized as being crucial in helping the reader to figure out the meaning of unknown words. Such meaning is expected to be derived from ***syntactic cues*** (i.e., word order or positional features of text) and ***semantic cues*** (e.g., using the context and cumulative meaning of a sentence to figure out the meaning of a word) (Alexander, 1988; Durkin, 1983; Singer & Donlan, 1989). Because no single cue would convey meaning in all situations, it is advised that a variety be taught. According to McCullough (1945), context cues may take the following forms: definition, experience (e.g., the workplace), comparison and contrast, synonym, familiar expression, summary, and mood or situation. Sternberg, Powell, and Kaye (1983) recommend examination of external cues in the surrounding text to figure out word meanings. Categories of external cues they recommend include temporal (suggesting frequency or duration), spatial (dealing with location), value (denoting worth), attributive (suggesting size and shape), functional (suggesting purposes or actions), enablement, class, and equivalence (e.g., antonyms and synonyms).

Cues have been shown to improve the learning of new words and to improve reading comprehension with proper instruction. But they are more effective with those subjects with high reading ability than those with low reading ability (McKeown, 1985). In the hospital project, they could conceivably have been used to add vocabulary in sentence completion exercises as in the following example: "Coffee, tea, and cocoa are examples of ________ (beverages)."

The difficulties inherent in relying upon compensatory cues as aids to reading have been addressed by Stanovich (1980), who points out that to cope with the problem of poor context-free word recognition (the problem that a reader encounters when he or she ventures into an unfamiliar domain without a background of acquired conceptual understanding) a reader can activate an additional "contextual expectancy process." In other words, the reader may rely upon contextual cues. However, this is a conscious and not an automatic process; fluent reading is supposed to be automatic. As a result, "the conscious-expectancy process uses attentional capacity and thus leaves fewer cognitive resources left over for comprehension operations that work on integrating larger text units" (p. 64). Stanovich concludes that good readers possess superior strategies for "comprehending and remembering large units of text" and that they are "superior at context-free word recognition." They can read across a range of domains. They identify words automatically and rapidly, whether by direct visual recognition or phonological recoding (p. 64).

Acquiring Versus Learning

As we examined the instructional approach of the project in light of what we know about the nature of useful literacy, the nature of reading at work, and school literacy, Gee's (1988) distinction between *learning* and *acquisition* became a useful reference frame. Growing up in Mexico assures that one acquires Spanish by modeling, trial and error, practice, and assimilation. Taking Spanish 101 helps one to learn Spanish by memorizing vocabulary and by learning grammatical and syntactical rules. These two different processes lead to very different types of competencies. The question, then, is—which assumption about the nature of the hospital workers in question is likely to yield better results? The question is hypothetical, but its correct answer could potentially make a great deal of difference in the way curriculum and instruction are approached.

Gee defines acquisition as

> . . . a process of acquiring something subconsciously by exposure to models and a process of trial and error, without a process of formal teaching. It happens in natural settings which are meaningful and functional in the sense that the acquirers know that they need to acquire something in order to function and they in fact want to so function. This is how most people come to control their first language. (p. 20)

He defines learning as

> . . . a process that involves conscious knowledge gained through teaching though not necessarily by someone officially designated as a teacher. This teaching involves explanation and analysis, that is, breaking down the thing to be learned into its analytic parts. It inherently involves attaining, along with the matter being taught, some degree of metaknowledge about the matter. (p. 20)

Gee contends that "acquirers usually beat learners at performance while learners beat acquirers at talking about it, that is, at explication, explanation, analysis, and criticism" (p. 21). We are better disposed to learn when we have a base of acquired knowledge. Learning is the higher state of literate practice, but one cannot get there without an acquired conceptual foundation. Again, this line of argument supports the use of on-the-job training or vicarious experiences such as can be fashioned in vocational laboratories as, perhaps, strategies that are more likely to lead to improved literacy and productivity than school experiences would.

Summary/Reflections

This case featured a vocational institution collaborating with a union and a group of hospitals to deliver workplace literacy training under conditions dictated by a federal grant. While the grant was restrictive, imposing artificial conditions upon the college by separating workplace literacy from technical training, it did allow somewhat idealized conditions for experimenting with curricular and instructional ideas, not the least being a time frame of eighteen months. This was an incomparable opportunity for a vocational institution wishing to hone its skills in what was a new area of programming.

While, for reasons discussed earlier, we did not focus on whether the project achieved its stated objectives (e.g., increased productivity), we did, however, gain insights which can help us to evaluate claims that Redwood might make regarding its suitability as a workplace literacy provider. Measuring such claims against hypotheses set forth earlier in the conceptual framework for this study, the following points appeared to be supportable:

- Evidenced by its customized services (including distance education) capability, the college had a tradition of collaborating with industry and being flexible enough to tailor curriculum and instruction to the specifications of industrial clients.
- The college had a tradition of providing both initial and continuing training in keeping with the lifelong learning needs of adults.
- Consistent with its vocationalist traditions, the college offered academic or literacy skills in the functional context of technical skills.
- Consistent with its traditions and with provisions of the Perkins Act, the college was capable of catering to the needs of an increasingly diverse workforce, a particular strength being its individualized approach to instruction.

Beyond these basic capabilities, which were consistent with our hypotheses, the college also showed, in the particular context of the hospital project, that it could collaborate successfully not only with management but also with labor.

We saw enough evidence in this project to be able to offer the view that Redwood, and colleges like it, can legitimately claim to be workplace literacy providers and to have a comparative advantage in so doing, largely on the strength of their vocationalist traditions—their inherent ability to work collaboratively with industry to convert workplace needs to curriculum and instruction. Where there appeared to be tentativeness, as discussed earlier, it was in the fashioning of instructional strategies related to reading in the workplace. Unlike other basic skills such as mathematics or writing, which have traditionally had a place in the fabric of the vocationalist curriculum, reading *per se* is a new area. Acquiring capability in its teaching appears to be an important challenge that these institutions must contend with if they are to fortify their claims as providers.

In seeking to acquire capability in this program area, vocational institutions such as Redwood have in their favor a tradition of linking theory with practice. They could capitalize on this tradition by approaching reading instruction on the assumption that workers possess schemata based on experience and a store of technical knowledge and skill. Instruction could probably focus on establishing the *read-do* connection between basic skills and hands-on technical skills and on providing opportunity for practice to help activate schemata. Reading instruction premised on technical knowledge and skill could then provide the basis for reading instruction of a more generalizable nature.

CASE 2
A HIGH-TECH MANUFACTURING COMPANY'S BASIC SKILLS PROJECT
(SKILLS 2000)

Background

This case reports on a basic skills program conducted by North Oaks Technical College, a two-year postsecondary vocational institution on contract for Pinewood Technology, a neighboring high-tech manufacturing company, both located in Elmgrove, a small midwestern town. Pinewood is headquartered in the town, and has a second plant across the border in a neighboring state. Elmgrove lies an hour and a half away from the state's metropolitan center. Its population is almost 100% white. Pinewood Technology is its second largest employer. In the fall of 1991, the company embarked upon an initiative known as Skills 2000. This initiative was prompted by the firm's in-house quality thrust, aimed at reducing process variation. This push for quality improvement in its process had increased the sensitivity of the firm to the rhetoric regarding the absolute necessity of the human element in today's competitive job market, the rapidly changing nature of jobs with the concomitant need to train workers continually, the increasing need for attention to be placed upon the literacy needs of workers, and the need for workers to be lifelong learners.

Beyond the question of quality, the company wished to ensure that it was in compliance with chemical right-to-know legislation that required workers to be aware of their workplace environs. If workers did not possess the basic skills necessary to understand and avoid workplace hazards, the company could be liable. Some workers held jobs which had position descriptions which called for basic skills. The company wished to reconcile stated skills with actual skills.

Pinewood has a history of supporting the training of its workers. It has a policy of open enrollment training and tuition reimbursement for courses taken on the initiative of individual workers. Such courses do not necessarily have to be tightly linked with workplace activities.

The company set forth three primary purposes for Skills 2000:

1. *Basic skills*—to give each employee the opportunity to gain the basic skills in reading, writing, and math

2. *Upgrading skills*—to continually upgrade employee skills as needed to operate new equipment and technology to make jobs more accurate, efficient, and faster

3. *Future skills*—to keep the skills of tomorrow in mind today; to be prepared for the technological changes of the future such as automation (taken from company newspaper)

These purposes were consistent with the view that the new technologies would engender less process variation, allowing employees to work to their full potential.

The company devised a plan for realizing Skills 2000. This plan included building employee support; conducting needs assessments involving job and task analyses to determine whether there were skill gaps; conducting literacy audits to resolve any gaps between the level of workplace materials and the reading level of workers; and, importantly, determining the educational level of each employee in reading and math. Information gathered from this process was to be the basis of a training curriculum.

To help implement the project, the company contracted with North Oaks Technical College on the basis of a long-standing collaborative relationship between their respective institutions. Through its customized training services, the college had worked closely over the years with the company's human resource department in delivering technical training. The company sponsored a computer laboratory at the college, which was used in its regular programming and for company-specific training. Workers from the company had also participated in the college's Adult Basic Education (ABE) programs. North Oaks was invited to be a partner in the very foundational stages of the idea. As spelled out in the company's newspaper, the college was expected "to assist us with appropriate processes and validity of the assessments, individual development plans, and coursework needed to upgrade skills."

We were invited by the project's literacy consultant to consider evaluating Skills 2000 within the framework of our work. Upon examination, we found that the case bore features that were consistent with our guidelines for selection of cases (discussed earlier). This was a high-tech manufacturing firm with world-class standing that had decided to embark upon a literacy audit of its workers and to fund the training from its own coffers. This firm was actively engaged in a quality initiative, seeking to reduce process variation. Indeed, a goal was to win the Malcolm Baldrige Award for Quality. It had contracted the services of a vocational institution to conduct the literacy audit, to design the curriculum, and to deliver the training. The workers in question were not in the at-risk classes that Carnevale et al. (1988) have identified. The focus of the audit was basic skills. The project consultant had put in place controls that enabled the firm to examine gain. All documentation for the project was to be made available to us; we would have access both to the company and to the college. We felt that in view of our guidelines for selection, here was a quintessential case. We decided to include it in our study.

Purpose

Our purpose was to examine the role of North Oaks in this collaboration with Pinewood Technology, in order to acquire further insight on the possibilities for vocational institutions as partners in workplace literacy programs and as deliverers of basic skills.

Method

The method included a combination of site visitation, document inspection and analysis, and formal and informal interviews of key informants. Documents were made available by the college's customized training staff, by the company's education and development staff, and by the project's literacy consultant. Materials provided included several interim reports on the project; memos exchanged between representatives of the company and the college and between the literacy consultant and college staff; copies of form letters designed for correspondence with workers; samples of instruments (e.g., an employee basic skills survey questionnaire and forms used to determine the reading and math requirements of jobs and the readability of workplace materials); copies of curriculum and instructional materials; a copy of the company's 1993 annual report; and copies of relevant issues of the company newspaper that pertained to the project.

Two site visits, each lasting two hours, were made to the college, during which the head of customized training and that unit's lead curriculum developer and ABE instructor were interviewed. In addition, several telephone interviews were held with these staff to clarify issues. One two-hour site visit was made to the company, during which we interviewed its education and development specialist (who had direct responsibility for coordination with the college) and its maintenance manager (who was intimately connected with the origin of Skills 2000). A prime resource was the project's literacy consultant with whom we held extensive conversations over a period of months and whose materials from the project were all turned over to us for examination.

In developing the case, we first examined the company's background and its stated reasons for engaging the college in its Skills 2000 initiative. Next, we briefly described the college and expressed reasons offered by its customized training staff as to why it was suited to delivering basic skills. We then discussed the approach of the college to the project, including its needs assessment and curriculum development activities. For the rest of the report, we reflected upon the case, and tried to draw inferences from it that might be instructive about possibilities for vocational institutions as partners in the workplace literacy enterprise and as deliverers of basic skills.

Pinewood Technology

Pinewood Technology produces suspension assemblies for computers. These assemblies are "very precise metal springs that hold the recording heads at microscopic distances above the disks in disk drives" (from the company's 1993 annual report). Suspension assemblies are quite critical to the operation of disk drives. The company's world-class standing can be gleaned from the estimate in its 1993 annual report that its market share is "seventy percent of the worldwide supply of disk drives produced by all significant disk drive manufacturers." The company sees itself as benefiting from two trends—(1) increased sales of computer systems (particularly PCs and portables) and (2) the growing importance of suspension assemblies in enhancing disk drive data storage capacity and reliability. Its annual report shows company sales to be $198,734,000 with a gross profit of $44,423,000.

North Oaks Technical College

North Oaks Technical College is one of the few colleges in the statewide system of two-year postsecondary vocational institutions that has a deliberate customized training focus. Indeed, college personnel claim that it was the first to embark on such an initiative. Also somewhat unique to the college is that it is an on-site provider of ABE. Staff associated with ABE run the college's developmental studies program which complements their regular curricular offerings and includes classes in areas such as reading, communication, grammar, punctuation, math, and study skills. Students may take such classes for credit, or they may take them remedially. As part of remediation, students may be tested to determine their assessed grade levels. The developmental studies program has attracted workers who may pursue such studies at their own rate and at times that are convenient to them. North Oaks also has the additional capability of offering distance education through interactive television. Such a capability allows it to reach customers beyond its walls in locations that can include workplaces.

In the view of Beth, the member of the college's staff most intimately connected with the project, "it was natural" for North Oaks to inquire as to whether they were willing to take on the role of provider of basic skills in the Skills 2000 project. This was because of the long tradition of partnership in training. It was her view that, while the company would normally comparison shop, "generally we're the provider of choice."

Rationale for Skills 2000

As indicated above, Pinewood had embarked upon a project called Skills 2000, the rationale for which was detailed in an issue of the company newspaper. To get a firsthand account of the company's way of thinking, we interviewed Randy, Facility Maintenance Manager, and Nicole, Education and Development Specialist. Beyond the basic rationale for the program, we were interested in the explanation as to why North Oaks was seen as a suitable partner in the enterprise.

Randy explained that a number of years ago the company had begun an internal quality focus which involved team activities. Workers were at that time expected to do more writing and calculating. This internal focus on quality revealed that some people had difficulties which appeared to be the result of their lack of basic skills. These perceived deficiencies were also evident in interview processes for supervisory staff. Some people had difficulty negotiating writing tasks. Others had difficulty working their way up through the organization into the management staff.

Management had been attuned to articles about the literacy crisis which appeared in trade journals and periodicals to which the company subscribed and wondered about the extent of its own situation. It was decided that an initiative to be called Skills 2000 might be a useful vehicle. A basic skills enhancement program was to be part of this initiative. The company felt it needed external assistance in determining if it indeed had a basic skills problem; to this end it engaged the services of North Oaks Technical College.

Why North Oaks Was Selected—Company Explanation

When asked why North Oaks—and not another provider—was engaged, Randy explained that there already was a good relationship between the institutions that had been "groomed over the years." They had worked with the college on the development of a technical skills training program "where they worked with us and helped develop the curriculum for our needs with our equipment and put it in place." Then there was the sponsored computer lab. Furthermore, the company did not have sufficient staff within its education and training department to facilitate the training.

North Oaks' Role

North Oaks was engaged by Pinewood to implement the basic skills aspect of the Skills 2000 concept. The college's customized services unit assumed the responsibility, along with its developmental studies staff. To augment its staff for the project, the college immediately encouraged the company to engage the consulting services of a workplace literacy specialist, a professor at the major university in the state. There was a long-standing relationship between the customized services staff at the college and the consultant, who had been invited there previously to teach a workplace reading course for the benefit of the college staff.

The explanation for engaging the services of the consultant for the project was that she would have "double the focus of having had the experience in many industries, and a variety of places in the country, and being at the university in adult education." The consultant joined the discussion between the company and the college from the beginning and outlined a course of action which they accepted. The work was to be embedded in the framework of Skills 2000. Main features of that plan included (1) an employee interest survey, (2) testing, (3) assessment of the grade level of workplace reading and math materials, and (4) assessment of the reading and math level of workers in selected units.

Employee Interest Survey

The college, in conjunction with the literacy consultant, developed a survey designed to get employees to indicate how important they thought basic skills were to their job and to show their level of interest in signing up for basic skills courses (e.g., reading, writing, and math). They were also asked to indicate whether they wished classes to be on-site or at the college and to express preference for the delivery mode, instructional time, and so on. The company targeted 224 workers from its high-tech group, its maintenance group, and from its "out-of-state" plant. Of these, 108 were interviewed. The results showed that there was agreement that basic skills were important. Understandably, the maintenance group was less inclined to agree than were the high-tech and out-of-state groups.

Audit of Workplace Materials

Following the employee perceptions interviews, the college sought to establish the level of the reading materials used by workers at the plant. A report submitted by the project's literacy consultant indicated that the audit was performed on "all the materials used on the job and in training to evaluate the reading difficulty of the materials, their importance to the job, frequency of use, and the exact reading, writing, and math skills needed to understand them." A memo from the company's education and development department showed that workers involved in the program were asked to bring "anything that they read, write, or calculate with" to scheduled interviews.

Based upon the audit of materials, it was found that the most important and most frequently used reading material was the job breakdown. Also important were engineering forms and control charts. These materials were measured at a seventh grade difficulty level. Reference materials, less frequently used, were at a higher reading level. The employee handbook, infrequently used, measured at grade twelve to thirteen. The training manual, used frequently, was measured at the twelfth and thirteenth grade levels.

The company's managerial staff read most often and at the highest level. Materials here ranged from grade seven to grade thirteen. No reading deficiencies were found among this class of worker when they were tested. Technical workers (e.g., skilled workers, engineers, electrical workers) had to read high-level reference documents such as manuals and code books, materials that tended to be at the twelfth grade level. They all tended to read at the post-high school level when tested. Reading was not as important to the jobs of general maintenance workers, as it was to the other groups of workers tested. Here, lead workers read more than their subordinates. For this group of workers, of particular difficulty were material safety hazard sheets, which measured at the college level, between grades thirteen and sixteen on the Flesch Readability scale.

Math skills used on the job included basic computations (e.g., addition, subtraction, multiplication, and division); conversion of fractions to decimals; basic statistics; knowledge of charts and ability to plot graphs; and knowledge of how to read measurement devices (e.g., calipers, scales, gages, and blueprints). Knowledge of the metric system was becoming a priority in order to meet international standards.

College personnel had an active role in the audit process. As Beth described, all people in the division met in groups; then some met individually. A consequence of this audit was that the literacy consultant was charged to help the company rewrite some of the higher grade-level materials so that they were nearer the grade-level norms of employees.

A sample of the results of the audit is summarized in Table 3 (see Appendix C).

Testing

Once the grade level of the materials in the workplace was determined, the college staff proceeded to test workers in reading and math to ascertain their grade levels and to discern any gaps between these assessed levels and the measured levels of workplace materials. Workers were administered the Level 2 Adult Basic Learning Examination (ABLE).

Reading

Of 108 high-tech workers, three tested below the ninth grade in reading, eight between grades six and eight, and one at grade 3.2. The vast majority tested at post-high school. Of eighty-nine maintenance workers tested, two were at the ninth grade, two at the eighth grade, and six at various levels below the eighth grade. The majority of the remainder were at the post-high school level. At its out-of-state plant, of thirty-six workers tested, two were at the eighth or ninth grade level; two more were at levels well below the eighth grade.

Math

In math, the average grade level score for high-tech workers was tenth grade, with most scores falling between the eighth and twelfth grades. However, ten were below the seventh grade, and sixteen below the eighth. For maintenance workers, the average score was at the ninth grade. In this group, five individuals tested at the fourth grade, four at the fifth grade, two at the sixth, eleven at the seventh, and four at the eighth. The remainder were at the ninth grade level or above. For out-of-state workers, the average was at the eleventh grade, with one worker testing below the sixth, three at the eighth, and the remainder at the ninth or above.

Based upon its program of testing, the college was able to set forth a profile of math skills that different categories of employees lacked. As can be seen in Table 4 (see Appendix C), these skills were decontextualized from jobs.

General Findings

In general, the findings did not reveal a problem of the order that has fueled much of the discourse on workplace literacy. But, as figures reported above show, there were workers whose assessed levels were at the eighth grade and below. Such workers were deemed by the project consultant to be at risk and in need of remediation. The basic skills enhancement need was more evident in math than it was in reading and more among maintenance workers than other workers.

Recommendations

On the basis of its needs assessment activities as described earlier, the college, in conjunction with its literacy consultant, made a set of recommendations to the company, which required (1) that individual reading assistance be provided for the single employee reading at the forth grade, (2) that "efficient reading" classes be established for those reading at or below the ninth grade, (3) that "brush-up" math classes be offered to the forty-two or so workers who tested at below the ninth grade, and (4) that reading materials for hazardous chemical materials should be rewritten.

Curriculum Development

Having completed the needs assessment phase of its work, as detailed above, the college proceeded to convert their analyses into curriculum. The focus was on math and reading. We describe approaches to both.

Math

The math program was characterized as a refresher. The curriculum for the class was framed by measured skill deficiencies as shown in Table 4 (Appendix C). College personnel wrote to individual workers informing them [illegible] their selection for the program. Individual interviews were held with workers to discuss their test scores and their instructional needs. The college staff used a math text, but they encouraged workers to bring work-related problems to class, and efforts were made to match math skills with actual work situations. The staff calculated that they could provide the brush-up skills needed by workers in eight to nine weeks. A tenth week was added at the request of the company to allow for a posttest. There is evidence from company records that there was some variation from this model. The evidence showed that 63 workers were provided with up to 19.5 hours of training (13 sessions of 90 minutes). Their pretest scores were generally at or below the ninth grade, consistent with reported figures. The posttest scores for these workers averaged at the post-high school level. All employees showed grade level increases, with the average being four years of high school. A majority of workers were able to attain the exit goal. Some workers were able to progress beyond the basic math curriculum to problems in measurement, graphs, and geometry.

Regarding grade level gains which were substantial, the college offered the caveat that increases might have been a result of latent knowledge which lay dormant because of lack of use, which the opportunity to participate in the course had rekindled. This was a plausible explanation.

Reading

As discussed earlier, the needs assessment phase of the project identified the type of reading materials used in the workplace by different groups of workers, the grade level of these materials, and the grade level of workers. The reading materials shared by workers with college personnel during the assessments were to form an important part of the reading curriculum. As Beth pointed out, workers were encouraged by their supervisors to bring work-related material. This process yielded a variety of materials including college-level books, chemistry texts, and so on.

Reading was confined to the facilities maintenance group, the group of workers that provided the most workers reading below the eighth grade, considered to be the at-risk marker. The curriculum outlined for the reading course (which was taught twice a week for sessions of ninety minutes over a period of seven weeks) was as follows:

1. *Purposes*
    a. Find information.
    b. Follow directions.
    c. Check information.
    d. Draw conclusions.
2. *Sample job-tasks*
    a. Check invoices.
    b. Get information from charts.
    c. Understand directions.
3. *Sample written materials*
    a. Memos
    b. Forms
    c. Charts
    d. Tables
    e. Reference books
    f. Letters

4. *Problem-solving strategy*

   a. Define your problem.
   b. Plan your solution.
   c. Read.
   d. Check your solution.

5. *Skills practice*

   a. Context clues
   b. Word parts
   c. Abbreviations/symbols

A memo from the project showed that the goal of the reading program was "to teach the students how to read critically to solve workplace problems by following a four-step strategy." As with the hospital project discussed earlier and included in Item 4 in the curriculum outline shown above, this four-step approach consisted of the following steps: (1) define the problem, (2) plan your solution, (3) read, and (4) check. It was hoped that the method would transfer to the workplace, and indeed, it was taught in conjunction with workplace methods. As to reading materials utilized, the following memo from Beth to Nicole is instructive:

> The class included a wide variety of reading materials. We used *Reading for Workplace Success* as the basic text; in addition, we used selected materials from another text from [the literacy consultant]. We progressed from these texts to [Pinewood] reading materials that our students might use: IDEAS form, [acid] bath room checklist, non-standard requisition form, job-posting application, Accu-Mix label and directions, and the [company] manual. Difficult vocabulary was defined and discussed.

As is evident from the preceding discussion and the course outline, North Oaks' basic approach to reading instruction was similar to that adopted by Redwood Technical College (Case 1) to the extent in which they both relied on the text *Reading for Success* (Park et al., 1991), with its four-step problem-solving approach and emphasis on generic reading skills such as structural analysis (e.g., prefixes, suffixes, and roots). For the same reasons we offered in our critique of Redwood's basic disposition to reading instruction, we questioned the pedagogic merit in North Oaks' teaching these generic strategies within the narrow context of jobs and in a reading course of such short duration.

Since both colleges took their instructional cues from the same reading text, *Reading for Success*, it was necessary to examine the provisions of that text to better understand their instructional stances. The text does indeed offer structural analysis as a fall-back strategy to be used by a worker when he or she is unable to decide on the meaning of a word by sight or from its context (Park et al., 1991, p. 142). But when a worker cannot recognize a word that derives directly from the context of his or her job, the problem would more likely be a lack of conceptual knowledge, requiring a different solution than ability to analyze word structure.

Reliance on structural analysis alone creates its own problem—the requirement that workers acquire a large enough storehouse of prefixes and suffixes. Prefixes and suffixes are utilized in reading instruction for their *transfer power*, not just to solve isolated verbal puzzles in narrow contexts such as workplaces. Thus, an unwitting shortcoming of the text is that it appears to offer these devices as *alternatives* to conceptual knowledge—in other words, as another workplace-bound literacy strategy, rather than as ways to move meaning making from the workplace into other spheres of life. If the goal of instruction does not include transfer of literacy skills beyond the workplace, then the reason for teaching structural analysis (e.g., prefixes, suffixes, and roots) disappears.

Reading Instruction

Beth reported that, in retrospect, the workers "weren't as poor as we might have thought they'd be." There were no nonreaders. Participants did not have problems sounding out words. One of the texts was used to help them work on how to find information that was needed. There appeared to be progress. Beth gave the following illustration:

> And then we got to the end and . . . I dug some worksheets out of the employee manual which was written at the twelve to thirteen level. They were able to find that. Well, now, that's really what reading is all about. If you can read to find information that you need, you've got things fairly well under control.

What Beth was implying here was that these workers could at least *read to do*. She felt that there was truth in the notion that workers read at one or two grade levels above their assessed level when the materials are work-related (Diehl & Mikulecky, 1980). This accounted for why the workers in the reading program fared better than typical ABE participants.

Unlike the math program, for which there was an exit target standard, the emphasis in reading was whether any gain was made. College personnel refrained from measuring gain in terms of generic reading skills which were not a focus of instruction. They also refrained from measuring grade level gain. This probably was just as well, since there was not sufficient time here for such gain. On this count, Beth observed that if a worker wanted to pursue further reading beyond the workplace focus of the course, that worker could continue by enrolling in ABE at the college, with the tuition being completely reimbursed by the company. This was an important structural feature of the connection between the college and the company and an important worker-centered feature of the basic skills program.

It appeared to us that Beth was making a distinction between reading in the context of work and more generic reading. Reading in the context of the college's ABE classes appeared to assume a different coloration than workplace-based reading. We inquired about how reading was taught at the college and, indeed, the approach described was idealized, allowing not just for workplace-based reading but for more generic remedial reading. Beth noted the following:

> We discuss . . . maybe we read a story. And before the story begins, there's some vocabulary. We have adult reading books in our room. Lots of them. And if someone wants to improve their reading, if we know that their skills are quite low, we would work in improving their phonics. We use the Orton Gillingham method for phonics for the great part. Works well. Adults with reading problems generally have a learning disability of some sort that caused them not to be able to read well. And so we would use that approach, teaching them some word attack skills. We have some books that go right along with that, that develop it . . . more practice, practice. We have them write. We have them read. And then we also have—for reading comprehension—we have a series of books that are made for adults. There's vocabulary instruction skills, break-down first . . . and talk about what the word means, how to pronounce them, now read the story to find out. Maybe there's one underlying thing you want them to find out . . . talk about . . . what did you find out? Tell me about this, that, and the other thing.

Beth went on to point out that, typically, there are exercises in the text so that instructors do not have to manufacture all of their materials. For the Pinewood program, however, they had to "go to a little different source if [they] wanted it to be workplace related." She mused that it would have been nice to use a regular adult reading approach in the program, but that was not done. Asked why not, Beth explained:

> Because that was not the goal. It was to help them improve their reading for the job. . . . We're going to read to find information. Because that's what they do at work. Now if they could not have done any of that [generic reading], then we would've had to go back to "go" and start to do some word attack building.

What Beth appeared to be saying here was that specific literacy must be goal directed. But she appeared also to be saying that such reading ought to be premised on an assumption of a foundation of generic literacy. If general literacy skills such as word attack or vocabulary building are not in place, then these have to be the focus prior to workplace-specific instruction. We agreed with this philosophical and pedagogical stance.

Underlying Philosophy of Literacy

It was clear from the basic approach to curriculum and instruction taken by the project that there was sympathy for the idea that workplace basics were something pragmatic. There had to be a tie with what one experienced in one's job. The purpose of reading in those circumstances was to extract information for use. There was clear sympathy here with functional context theory. But there was evidence of a second value at work, premised on a more generic conception of literacy. This value, we surmise, was conditioned in great part by the fact that Beth and her staff were fundamentally reading and ABE teachers. They knew, as Beth alluded to in our site interview, that the teaching of reading is difficult. The ABE focus required a broader approach to the basics than focus on the workplace allows. If a worker was perceived to not have fundamental skills (e.g., word attack skills), the solution was seen as providing that worker with these basics in the context of general literacy. This ethic was evident in the view expressed by Beth that "workplace literacy leads to family literacy," a contentious view which, as Gowen (1992) points out, suggests that what is good for management is ultimately good for workers.

But we sensed a sharp difference between the tone of the King Memorial project that Gowen describes and Skills 2000. Workers who wished to go beyond the functional had the opportunity to so do in the Skills 2000 project. Beth spoke with some satisfaction of workers saying that a benefit of the program was that they could help their kids when they brought home their books.

Residual Effect of Experience in Workplace Literacy

One plausible effect of the involvement of vocational institutions in workplace literacy programming is that lessons learned can redound to the benefit of the regular curriculum. We asked Beth to consider this assertion. She agreed that the college had learned from the experience. They indeed know a bit more now about contemporary workplace conditions. They have acquired new capabilities with respect to reading literacy, which has helped them to be even more effective in diagnosing and remedying the basic skill needs of students.

Evaluation of the Project

What needs to be reflected upon here is whether North Oaks' role in the Skills 2000 project has been instructive for vocational institutions. What can other vocational institutions learn from the project? To address this basic evaluative question, we reflect upon (1) the disposition of the college as a literacy provider, (2) the processes embarked upon during the project, and (3) outcomes of the project.

Dispositions of the College

A positive lesson to be learned from North Oaks is that, like Redwood Technical, it had over the years established a customized services capability that allows it the flexibility to collaborate with corporate clients to deliver training. But beyond working with corporate clients, the college had developed the capability to work with adults not only in meeting their technical skills training needs, but also their general education needs, through its ABE and developmental studies programming. The college had deliberately sought to improve its capability here through staff development efforts that drew it into partnership with university-based expertise. The college could now draw on this expertise as needed. This willingness to partner, and the professional relationships thus forged, provided a key link in the approach to the project. Hiring a literacy consultant was a progressive move that becomes evident as one examines the processes employed by the college during the project, notably, the controls that were put in place (such as pre- and posttesting of workers). When called upon, the college was ready to respond because it had the trained staff it needed, along with access to high quality advice on workplace literacy issues and procedures.

Processes

The noteworthy processes in which the college was engaged included the following: (1) working collegially with the education and development staff of the company, (2) dealing directly with workers in their workplace (e.g., holding worker interviews to determine the nature and level of workplace reading materials, (3) pre- and posttesting, and (4) curriculum design.

Partnering with HRD

A crucial aspect of the partnership between a vocational institution and a company is that rapport be established with the human resource personnel of the company. Companies rely on their human resource departments for guidance on training issues such as the engagement of a suitable vendor. Rapport with these departments allows a closer scrutiny of company needs and of what is possible (e.g., the amount of training time that the company will tolerate, modes of delivery that suit workers, and other cultural factors pertaining to training that human resource professionals would have come to know). North Oaks' staff had cultivated such rapport with the education and development professionals at Pinewood. This collegiality created a proper framework for the college that allowed it to perform tasks (e.g., interviewing and testing) that could otherwise have been logistically and politically difficult.

Dealing with Workers on the Job

To understand worker needs it is necessary to gain firsthand knowledge of their workplace circumstances. The college demonstrated capability to do this by having its customized training staff work directly with workers and their supervisors in their work settings in order to gain data that would lead to more credible and relevant curricula. Working in concert with workers in this way assured a degree of political support for and ownership of courses. That important safety-related documents were rewritten on the basis of direct contact with workers in the workplace could only have enhanced the credibility of the college staff, making the promotion of the instructional program easier.

Pre- and Posttesting

A major feature of the project was the establishment of a framework that allowed the measurement of gain. The college was able to do this by establishing baseline data through pretesting and a collection of normative data through an assessment of actual levels of basic skills required in the workplace. These controls enabled the company to see gain (especially in math) and, thus, to feel that their investment was justified. While the establishment of pre- and postmeasures on their own does not assure the elimination of error in forming judgment about the efficacy of such programs, it does allow at least a crude measure of the effect of instruction. The establishment of such measures would seem to be a feature that colleges should include in the structures they establish when they become involved in workplace literacy programs.

Curriculum Philosophy and Design

Consistent with functional context theory, the college made a direct link between materials used in the workplace and the curriculum. What made the design noteworthy was that it was premised upon generic literacy skills such as word attack being in place. If these were not in place, then the design was such that a worker, at company expense, could attend classes at the college to acquire these generic skills, independent of a workplace focus. This premise of specific literacy being contingent upon generic literacy was noteworthy.

Caveats

Under this heading, we draw attention to the practice of decontextualizing workplace skills for the purpose of curriculum and instruction. While there is a case for abstracting math and reading skills across occupations for efficiency purposes, it might be sounder pedagogy in some instances (e.g., reading a rule, a micrometer, or a blueprint) to not abstract these skills and, instead, to teach them in their natural confines, that is, on the job (Diehl & Mikulecky, 1980; Gee, 1988; Resnick, 1990).

The more vocational institutions take the approach of decontextualizing workplace-based curricula, the less they draw on their own unique strengths, at the forefront of which is practicality. In short, basic skills should be tied to technical skills as much as possible, or else the work of the vocational institution would not be distinguishable from that of another provider.

To illustrate this point dramatically, our visit to Pinewood revealed that the company had embarked upon a new approach to basic skills training that was less dependent on the college. They had invested in a new interactive computer system, allowing for self-paced instruction on-site at the discretion of workers. They were experimenting with this new instructional model. The following excerpt from our interview with Nicole (company trainer) is instructive:

> *Researcher*: Now, is the project still ongoing?
>
> *Nicole*: The most recent group that we just had go through were the chemical technical technicians. There were eight of them, and they went through each of the steps of the process. It was determined that five needed to take some additional math training and one needed to take some training in reading. *Now the difference here was where they got the training* [emphasis added]. We have an interactive self-paced video learning lab here in the plant. And it was just operational December 5 of this last year. So it's only been up for a few months, about six, seven months. And with this group, we decided to pilot our basic math, reading, and writing skills program using them. And so they went through this interactive video series here in-plant. That's how they received their training.
>
> *Researcher*: Interesting . . .
>
> *Nicole*: It's *Beyond Words*, [a commercially available] program. And we just got really high, high marks from the employees who went through on that program. They liked it. They liked being able to go at their own pace and on their own. The confidentiality so nobody else knew what it was that they were working on or if there were things that they were struggling with it, and [if] it took them longer to get through a lesson, nobody else needed to know that. They were completely on their own. They also scheduled their own time in. When they had time available, they got to do it on work time also, but they had to judge for themselves when they could get some free time or get somebody to cover for them to go into the lab to spend time.
>
> *Researcher*: Now that curriculum, was that canned, or was that designed by the tech college too?
>
> *Nicole*: No, that's canned curriculum. It was developed for eighth to twelfth grade level skills. And its intent, I guess, originally, was to prepare people to take the GED if they had not graduated from high school. But anyway, it takes them through what's normally taught through the twelfth grade level.
>
> *Researcher*: So these people here had no real contact with the tech college?
>
> *Nicole*: No. Correct. Well. They did in this part. They were surveyed, and then they were interviewed, but not for the class.
>
> *Researcher*: OK. So what the tech college did here was to identify these people through the needs analysis?
>
> *Nicole*: Yes, identify what needs were by looking at the materials that they needed to use on the job.

> *Researcher*: But then, since the curriculum was canned and computerized . . . prescribed maybe by grade level, but beyond that . . . one of the things it would seem they can't get would be the relatedness with their work . . .
>
> *Nicole*: Correct. Right. That's missing. If they don't get the job specific *they have to figure out the application themselves* [emphasis added]. So whereas with the chem tech, they're doing things like adding chemicals so that as things evaporate or are used up or whatever that the bath stays the right percentage of different chemicals. So they check that out and they have to add different amounts of chemicals, and that's an example that would have been real helpful in the technical college. They could have talked about those specifics. Well, if the tank is at this level and we have to figure out, I don't know what all they do, but anyway, they could have explained, and the tech college would have come up with some examples using that specific job-related type of example. And so that was missing. What we did have was a person in this area (now that made it real nice for this area) who is a math expert. He was a math instructor at the college level beforehand. And he was available as a resource for these people if they ran into problems. Of course he works right in that area so he could help share some examples of how they could be able to apply it on the job. That worked real nice in that area. We know we don't have that in all areas. And he's not available for all areas. He helped there because it's their people. So we may, and I've talked with the technical colleges about this, we may need some tutoring help with people as they go through these math, reading, and writing classes where, when they run into problems with the interactive video and there's no instructor there to answer their questions, we could send them over to the technical college.

Further conversation with Nicole revealed that the company was thinking about fulfilling all or most of its basic skills requirements according to this pilot model. She explained that since people have different learning styles, some workers may not relish working on a computer, and these workers could go to the technical college. The role of the college would be confined to needs assessment, testing, and tutoring.

Interactive equipment is a high-tech way to substitute for the services of a technical college. But there are less sophisticated solutions. The college, after all, relied on standard classrooms and expert instructors. If the problem is to deliver decontextualized basic skills, other providers, such as public schools, can plausibly lay claim to the same skills.

Summary/Reflections

As in Case 1, this case revolved around a vocational institution, North Oaks Technical College, and the philosophy, dispositions, and processes it brought to bear in fashioning a workplace literacy program according to the designs of a high-tech manufacturing company. In our view, based on evidence, such as was found at Redwood Technical College, North Oaks Technical College could point to some potential advantages that it might have over other providers. These advantages include the following:

1. a customized training focus that has allowed it to work collaboratively with industry in fashioning curriculum and instruction to their designs

2. a vocationalist tradition that allows it to teach basic and theoretical skills in their functional context

3. the capability to offer not just preparatory job skills but also upgrading skills in keeping with the lifelong learning needs of workers

4. distance delivery capability

Beyond these advantages which it shared with Redwood, North Oaks had an additional important capability—a tradition of offering ABE side-by-side with regular vocational programming, along with remedial capability for vocational students when needed. This ABE function had resulted in the college acquiring capability in reading instruction, not only at the functional, but also at the generic level. This was a very significant dimension of the claims that North Oaks has made regarding its comparative advantage in the workplace literacy enterprise.

WORKPLACE EDUCATION CENTER— NOTES ON A PRIVATE PROVIDER (PREAMBLE TO CASES 3 AND 4)

The Banking Services and Hotel Services cases to be subsequently described here (Cases 3 and 4) were conducted by the same provider, which we will call the Workplace Education Center (WEC) (not its actual name). WEC, a private not-for-profit agency, is a relative newcomer to the scene, becoming involved in the delivery of workplace literacy services to private sector manufacturing and service firms in 1988, at the height of the debate on the need for increased literacy in the workplace. Because many businesses (mainly because of their small size) do not have the capacity to provide for the educational needs of their employees, WEC has thereby found a niche. Its mission is to assist such businesses in planning and providing workplace basic skills programs. Services that it offers include (1) readability analysis of workplace materials; (2) basic skills/job-task analysis; (3) workforce assessment; (4) customized curriculum development; and (5) customized courses including ESL for work communication, reading and writing for the workplace, and math for statistical process control.

WEC's director reported that as a result of four major trends in the workplace, employers now request job context-based literacy instruction. These trends were (1) international quality standards for products and services, (2) increased concern for customer satisfaction, (3) workplace organization and reorganization, and (4) new workplace technology. She explained further that, in the past, management tended toward a philosophy of "compartmentalization," but now they were partial toward "cross-functional" organization. To succeed, this change would depend upon worker training. There was also the question of technology's impact on work. The director listed some of the new developments to which WEC has had to respond as follows:

> There has been introduction of new technology such as CNC [Note: Computer Numerical Control] [and] calculators—you will be surprised that some of the older workers are not comfortable using a calculator. They went to school before calculators were widely used and never got to learn how to use one in school. Computers are being used more and more. Our new training has been in SPC [Note: Statistical Process Control], customer services, work processes, and teamwork in manufacturing firms. Many firms are preparing for ISO 9000 certification, which emphasizes quality and requires workers to use Statistical Process Control techniques. Workers also have to deal more and more with written instruction,

> especially [of] machine procedures. Customer satisfaction has become more important.

A training manager in one of the manufacturing firms served by WEC explained the following difficulties associated with introducing new techniques:

> We are preparing for ISO certification, as you can see. (He showed the ISO promotion badge on his shirt pocket.) One of the things we intend to implement is SPC. When we began training, our machine operators on SPC we found that they did not have sufficient mathematical skills to handle it. We were forced to provide some basic math training in areas like decimals, division, mathematical means, and graphing before the employees could undertake an introductory course in SPC. This is where the WEC came in.

WEC as a Business Enterprise

WEC's goal is to deliver quality literacy instruction. However, like other providers, the staff judiciously avoids the use of the term *literacy* in conversation with employers and employees. As Jones, Locsin, Lynch, Mrowicki, and Olivi (1993) explained,

> The term *literacy* can bring to mind someone who is totally unable to read or write, whereas the participants in a workplace education program may possess sufficient skills to carry on daily tasks, including reading of local newspapers, but lack the special literacy skills for a changing workplace such as reading complex line graphs and lengthy procedural manuals. In such a workplace the term *literacy* may insult many of the actual workers who the program will be attempting to recruit for participation. (p. 6)

An entrepreneurial perspective was apparent among the staff who characterize themselves as players in the competitive field of training. Their survival depends on their ability to recruit and satisfy the educational needs of clients and write successful proposals that get state and federal funds to support WEC. Although, in the past, this goal was sufficient to motivate WEC to strive for the highest quality of service possible, a new factor has recently been added. WEC is having to compete with multinational firms for funds and sites to provide workplace literacy programs, especially at sites where the employers want to reorganize the workplace and implement Total Quality Management (TQM) methods. The training enterprise is business-like enough to have its own trade secrets, indicated by reluctance on the part of the director to reveal the contents of funding proposals or final reports to grant agencies. A great deal of effort is devoted to producing a good funding proposal, a task in which WEC's director is specialized. How to promote their operation has become a new preoccupation for the director.

> *Researcher*: How do you promote yourselves? How do companies know about your services?
>
> *Director*: Actually, that is one of the problems we have. We do not advertise our services. We depend on our reputation and contacts in this city. This is an area in which we need ideas.

Despite this lament, the company has a large number of client firms. It has established itself as a provider of choice.

WEC's Instructional Program Planning Policy

WEC's policy is to seek input in program planning from all of the stakeholders. Although plans are developed cooperatively with active involvement of the training provider, representatives of the employer, and employees or their union, the actual process varies from program to program. After the plans are developed and agreed upon, WEC submits a proposal to the employer for the services that it will provide, including job-task analysis, testing and other literacy assessments, and curriculum development and instruction, and then enters into a contract to implement the plan. The contributions of the participants in the program process follow.

Coordinator's Role

The coordinator, who is employed by WEC, participates and acts on behalf of WEC throughout the planning stage of the initiative. He or she meets with the employer, employees, and, where appropriate, union representatives to collect preliminary data required for proposal writing. When the proposal to conduct the literacy initiative is accepted or approved, the coordinator assesses the employees' basic skills (also called a literacy audit) and analyzes job-tasks (which sometimes involves job shadowing). The coordinator then develops the curriculum and submits it to the employer for approval before scheduling instruction. The coordinator often doubles as instructor, as one WEC staff member pointed out:

> I am the coordinator of this program. I am also the instructor. Sometimes we hire part-time instructors for a specific program. In some programs, the instructor and coordinator may be two different Center staff. I prefer that the instructors be present during the literacy audit so that they may observe the real context and be better able to understand the employees' needs.

At the completion of instruction, the instructor assesses the employees' learning and reaction to the program and later interviews supervisors to assess transfer of learning to the job. WEC uses a team approach. Each member of the permanent staff is capable of assuming any of the aforementioned roles in any of the general training categories, including ESL training. For this reason, staff may interchange roles from project to project, or they may operate in tandem at different stages in a given program. WEC director is involved at critical stages in the planning, especially in proposal writing, final stages of the literacy audit, and employees' skills assessment. WEC assigns a coordinator to each initiative to consult with the employer on a regular basis in order to assure the plan was followed. Some of the senior WEC staff serve as instructors at one site and coordinators at another. This role reversal is intended to enable each staff member to view planning and instruction from more than one perspective and, therefore, heighten the level of sensitivity to the concerns of instructors and employers. The coordinator was the person the employer/client contacted whenever a problem surfaced during a program.

Employer's Role

The employer identifies a literacy problem and sets out to resolve it by contacting WEC. The employer then facilitates the literacy audit by scheduling interviews between supervisors, training staffers (where there is a training department), and WEC staff. Employee testing and counseling sessions are also scheduled by the employer. The curriculum is approved by the employer; finally (and oddly, in our view), impact assessment after the end of the program is largely the employer's responsibility.

Emphasis is on forming a partnership between the business and the educational provider. Employee unions play a major part in planning workforce literacy programs that are conducted by WEC. Table 5 depicts the complementary nature of the roles assumed by WEC, the education provider, and the business for which it conducts workplace literacy programs.

Table 5
Partners' Roles—Notes on a Private Provider

Business	**Educational Provider**
Identifies the contact person.	Facilitates the committee meetings.
Forms a basic skills committee.	Provides input on policy decisions.
Makes policy decisions regarding the purpose and scope of the audit.	Provides input on the company awareness campaign.
Plans a company awareness campaign.	Participates in the company awareness campaign.
Identifies appropriate managers, supervisors, line staff, and workers to participate in the audit process; schedules interviews.	Interviews key people.
Assembles written materials.	Analyzes the written materials.
Arranges for job observations.	Conducts a job literacy task analysis.
Reviews the findings.	Prepares a report from the findings.

Source: Jones et al. (1993), p. 10.

While each employer assumed these roles, some employers showed greater levels of involvement and interest in their literacy programs than others. For example, some employers preferred to let the training provider handle the details, while others delegated managers to sit in during classes to find out what was taught and how it was taught. Even when employers supported the program, some instructors indicated that supervisors were not always supportive, as the following dialogue indicates:

> *Researcher*: We have heard that at other sites some supervisors are somewhat unsupportive of workplace basic skills programs. What was your experience here?
>
> *Instructor*: I had quite a problem in the beginning. They were very suspicious. People didn't want to give me the information I needed, but I went ahead and started. After a while they realized that we were here to train, and we did not have a hidden motive. When they realized this, they became very cooperative and gave me everything I wanted: documents, blueprints, forms, memos.

Employers were motivated to provide literacy programs for different reasons. Some employers sought training programs intermittently to deal with an immediate problem. Others had a long-term view and implemented training in anticipation of future changes in the firm such as the introduction of SPC techniques.

Employees' Role

The input of employees is typically encouraged after instruction begins. Employees may make their needs known to the trainer. They may verbalize very precisely those job-tasks that they felt inadequate to perform and aspects of literacy in which they felt the need to become more competent.

Union Involvement

Where a firm is unionized, union support is sought for training programs. In one such case we observed, the union representative simply gave approval but provided little input into the planning of curriculum. WEC staff reported that this situation was not unusual. The following excerpt from an interview with a WEC staff member, who was the instructor at one site, provided further detail:

> *Researcher*: Are the unions involved in planning programs?
>
> *WEC staff member:* It depends on the site. There are strong unions in some companies but not in others.
>
> *Researcher*: Was the union involved here?
>
> *WEC staff member:* Yes, to some extent. We informed them about it and asked for their approval. Their part was quite limited. Sometimes there are no unions at all, or there could be one that is weak. In this plant there was some resistance from employees. They are quite comfortable here with very good pay and benefits. Many of them have been here for fifteen years or more. When they were told about the proposed program their reaction was: "We are fine. Why do we need to learn new things?"

Funding

WEC depends primarily on state and federal contracts. State funding through the Secretary of State Workplace Literacy Grant Program is subject to regulation regarding the level and type of skills that may be taught and the length of the program (Ryan, 1993). Technical skills are excluded (a stringency which makes WEC credible, but which, as was discussed in Case 1, frustrates vocational education providers), and programs are restricted to "adult employees who read, write, comprehend, and/or compute below the tenth grade level" (p. 1). This grade level limitation is not very clear-cut. In some WEC programs, content is difficult to place using this grade school criteria. An example is the area of problem solving which was included in some programs.

Funding is usually available for twelve months with no automatic renewal. The allocation of these funds is done on a competitive basis by a Literacy Advisory Board appointed by the Secretary of State in accordance with relevant state law. This state program is one of WEC's main sources of funding. Each grant has an upper limit of $10,000, and the training provider must provide a written agreement in which the recipient firm agrees to provide matching resources. Matching is usually done by providing space and paying employees for the time they spend in class (paid release time). Grant writing is obviously considered pivotal because of the competitive nature of grant funding. As indicated previously, this task fell almost solely to the director.

WEC's Curricular and Instructional Philosophy and Approach

Services offered by WEC have been alluded to earlier. WEC subscribes to the functional context approach to curriculum and to competency-based instruction. WEC staff make a distinction between competencies and skills (generic skills), as the director's response with respect to the SCANS report (1991) illustrates:

> We . . . refer to the SCANS report but we use it as a guide. We do not use their recommendations directly because the SCANS report deals with (generic) skills while we are competency oriented. Competencies are directly related to job-tasks.

WEC views generic skills as being transferable to a range of situations while competencies refer to demonstrated ability to perform a task successfully in a workplace context. Competencies could be subdivided into specific skills. This focus on *competencies* rather than generic *skills* seemed at odds with the company's basic argument for its existence, which is that workplaces are in flux.

The curriculum development process starts with a list of competencies, which is then used as a basis for generating a list of specific skills. A WEC instructor explained the process as follows:

> After the interviews and my observation of the actual job-tasks, I came up with a list of competencies. What we do is look at each competency and decide what skills are needed in order to carry out the task involved in the competency. For example, we might decide that some basic math is needed in order to perform a certain computation on the job.

This process can be quite elaborate. The curriculum objectives address both the learners' and the company's needs. According to one WEC manual (Jones et al., 1993, p. 29), the goal of the curriculum is to describe what is to be taught and is achieved using the following four steps: (1) identify competencies, (2) write a course syllabus, (3) develop a customized pre-/posttest, and (4) develop instructional materials. It is worthwhile to describe in detail how the typical WEC syllabus is structured. It includes the following:

Basic Skills Competency: Under this heading is a list of competencies approved by the basic skills committee.

Core Basic Skills: This section identifies which specific skills are used to perform a competency. It is the center of curriculum development and lesson planning.

Company Specific Terminology: This component of the syllabus lists company materials that support each competency. Examples of these materials are (1) company policies and procedures, (2) forms employees read and fill out to do their jobs, (3) safety signs and labels, and (4) names of products.

Pre-/Posttests: Customized tests that evaluate employees' performance of the competencies are used. The competency-based approach consists of pre- and posttesting—that is, using the same test for placement of employees and evaluation of achievement of the competencies. Testing for achievement of competencies is done after each competency is learned and at the end of the cycle.

Instructional Material: These are customized worksheets and instructional paraphernalia developed by instructors to teach the competency. The instructor selects company materials that are appropriate to the level of the course to be delivered. Depending on the course and the level of the participants, worksheets can be used to practice, review, reinforce, and enrich the competency. Instructional paraphernalia include posters, collages, or journals.

WEC programs typically extend over a period of thirty-six contact hours.

Support Services

WEC attempts to provide support services to workers. A primary support service it offers is making referrals to community ABE providers where workers can learn needed skills not covered in the workplace education program. Examples of these skills are basic reading, writing, and mathematics. Information regarding available community services is provided to the employees during counseling after initial skills assessment. Many employees needed encouragement to overcome their reluctance to make the initial visit to neighborhood adult education classes.

WEC Staff Backgrounds

WEC's staff consists of eight people, all of whom have college degrees. Some are multilingual; others were former public school teachers. Two had served as Peace Corps volunteers—one in South America and the other in Africa. This experience seemed to have had a large impact on their views regarding assisting the disadvantaged. Staff members are encouraged to attend professional conferences such as those of the American Society for Training and Development, in order to expand their perspectives and deepen their knowledge of the field.

Summary/Reflections

Having outlined the philosophy and operations of WEC, we next illustrate two cases involving this provider. These cases are a basic skills program at a branch of a large bank and an ESL program at a major hotel. Of interest here is that WEC presents a new configuration of a vocational institution, its model being that of a flexible, itinerant private vendor, specializing in workplace literacy. Within the realm of human resource development, vendors of this order typically offer managerial, sales, and supervisory training. As such, they tend not to be in competition with vocational institutions, whose customized services tend to be of a technical nature. But in the realm of workplace literacy, an entity such as WEC is in direct competition with vocational institutions, their operations being made valid by the fact that state and federal authorities unwittingly mandate the separating out of literacy and technical skills. This challenge forces the latter to focus its claims. What does a vocational institution bring to workplace literacy programming that an entity such as WEC cannot? Are vocational institutions better equipped to offer such programming?

CASE 3

A BANKING BASIC SKILLS PROJECT

(NEET)

The Problem and the Context

This program was conducted by WEC at a downtown branch of a major corporate bank in a large midwestern U.S. city. The bank has 17,000 employees working in an estimated 100 locations across the country. The branch is one of eight such locations in the city and is part of the corporate banking division specifically dealing with remittance banking. Checks that come to this location are addressed directly to the bank, usually in self-addressed business-reply envelopes containing the destination bank's zip code and a box number that identifies its corporate client. The box into which the checks are deposited in such a service is called a "lockbox." Each corporate client that uses this service provides the bank with written instructions outlining how to handle its checks. Employees at the lockbox division needed to be able to read these instructions and enter data into computers according to the client's instructions. This data entry process became a focal point of attention because of frequent errors. These errors added to the bank's expense because systems had to be put in place to catch them. One such system involved having each check amount entered both in numeric and verbal form, numeric by one worker, verbal by another. If the two did not match, the software would indicate an entry error.

This system of data entry not only increased the workload, it also required that employees improve their skills in speed of entry of written numbers. This is a skill that involves reading the amounts in words on each check and translating the words into numerals for keyboard entry. In addition, the employees in question needed to be able to read the written instructions provided by clients regarding how their account was to be managed. The bank decided that workplace literacy training was required for its nonexempt employees, that is, employees who are paid hourly. Such employees comprised 85% of the establishment; the other 15% are salaried. WEC was engaged as provider for the training program, which was titled Non-Exempt Education and Training (NEET).

The bank has traditionally provided for the training needs of its salaried employees. This training, which sometimes leads to a formal degree, is approved by the bank's training coordinator. According to the training coordinator, 85% of the training dollars are typically spent on the top 15% of the corporation's employees. Most of their training consists of enrolling in formal education courses for which the bank pays. NEET was for workers who were deficient in skills needed for their work but who did not receive training through other programs. The banking services program which will be described here was administered by WEC in close partnership with the bank's training coordinator as a part of NEET.

NEET

The NEET program began in 1991 with employees of the lockbox section. In 1992, employees in the remittance section were included. Three classes totaling twenty-nine people completed the training. Classes were scheduled to coincide with the end or start of the employees' work shifts for minimum disruption of the organization's work schedule. This case is based on observation of a training program involving employees of the bank's remittance section.

Planning and Proposal Writing

The planning of this program was carried out by WEC in close cooperation with the NEET coordinator from the bank. It followed the pattern of other programs run by WEC with the advantage that NEET had its own full-time coordinator from the bank who initiated contact with WEC. As usual, an informal needs assessment was done to determine program viability and to collect preliminary data to be used as a basis for proposal writing. Subsequently, the proposal received state funding from the Secretary of State Workplace Literacy Grant Program. A literacy audit to determine the skills required for the nonexempt employees was performed, followed by a formal employee skills assessment using the TABE as a pretest and a screening tool. The TABE is one of the recommended standardized tests for the state-mandated pre-/posttesting. The assessment was on a voluntary basis. Those employees who scored at the 8th grade or below were asked to join the new program although they were not told about their grade level test scores.

The program designers had to promote this program internally, taking into account the sensitivities of workers regarding their being targeted for literacy training.

Needs Assessments

The literacy audit was performed using the WEC model previously described. Management was consulted to determine the bank's short-term and long-term goals that the program would need to integrate into its course objectives. Interviews with supervisors were conducted to obtain a description of the employees' jobs and to identify competencies that were required for satisfactory work performance. Workplace materials were collected, including forms, manuals, and instruction sheets. The audit yielded an initial pilot curriculum that was to be used as a prototype to gauge the ability of employees to overcome their fear of returning to the classroom, in some cases after many years.

The coordinator's comments indicated that needs assessment had another agenda apart from determining what competencies the employees needed. It also served to formulate strategies for convincing higher management of the need for such a program—a program which interrupted employees' work in order to allow them to go to class on paid release time. Indeed, some management found it difficult to link training with data entry errors and needed to be convinced.

Skills Assessment

Employee skill assessment followed WEC's pattern. The NEET program coordinator provided the following account:

> There are about 250 nonexempt people at the [Jackson] Street location. These were initially told about the intended program and asked for voluntary assessment. One hundred and sixty employees took this assessment based on the TABE (Test of Adult Basic Education). This was privately scored, and those who scored eighth grade or below were asked to join the program. The grading was not mentioned to the employees. They were only told about their strengths and weaknesses.

As indicated earlier, the employees were not told about their grade-level scores which, it was felt, would be interpreted negatively by them. Instead they were told only about their strengths and weaknesses and how joining the program would help build their strengths and address their individual weaknesses. At the time of our observations, twenty-nine employees had moved beyond the assessment process.

Curriculum Model

The literacy audit resulted in a customized course dealing with a number of skills which were designed to improve (1) speed and accuracy in transcription of numbers; (2) math skills such as working with decimals and round numerals, and for work on time cards, time zones, and military time-telling; (3) reading skills such as skimming and scanning documents; and (4) problem solving. The course we observed had four modules, as follows:

Module One:	Vital Number Skills
Module Two:	Math Refresher (decimals and percentages)
Module Three:	Reading and Writing
Module Four:	Problem Solving

Classes observed were on the vital number skills and problem-solving modules. As was usual for WEC programs, the courses consisted of nine weeks of instruction for a total of thirty-six contact hours. The curriculum was, for the most part, workplace-relevant, though applications from outside of the job were entertained, especially in the problem-solving class. Examples from life outside of the bank were frequently used, but the focus was on improving job-related skills.

The following three categories of training materials were observed: (1) custom-made materials designed for this specific program by the trainer; (2) materials adapted from printed commercial sources; and (3) job-related materials such as memos, forms, and manuals. The trainer relied heavily on worksheets and exercises she had designed. In addition to the formal curriculum, she repeatedly provoked trainees to be more proactive and aggressive in pursuing their ambitions. Adopting a Freirean stance, the trainer seemed to be concerned about the impact of the program not just on the immediate work situation, but on the lives of the workers as well, showing workplace education as a tool to further oneself in life.

Instruction

Problem-Solving Module

The trainees brought to class actual examples of problems from their jobs so that the trainer could use them to teach work-related problem-solving techniques. Alternative solutions and approaches to problems were sought. In a class exercise, for example, the trainer provided a list of problems and separate solutions and had the trainees link each given problem with a suitable solution. The problems were categorized as *personal*, *practical*, *communication*, or *value conflict*. Participants were then asked to identify problems occurring at work and then to identify the categories into which they fit.

Part of the problem-solving training involved teaching participants to enquire (i.e., to ask questions or write memos asking questions) so that they could clarify issues at work. This was especially so for the materials used on the job such as the report forms that employees regularly filled out. These forms contained many cryptic abbreviations which had meanings even the supervisors did not always know. The instructor got trainees to find out what each abbreviation meant. Examples of how to construct a memo to solve problems were given. Steps on how to do so were taught to the participants as follows:

1. State the problem.

2. Explain why it is a problem and do so from the management's perspective. For example, the microwave doesn't work in the cafeteria, and this causes workers to spend a lot of time going elsewhere to warm food, hence causing them to be late arriving back from breaks.

3. Offer a solution.

The trainees were also trained to anticipate problems and have contingency plans. Practical life problems were used as references. For example, if an employee's babysitter failed to turn up, then he or she should have a "plan B" in the form of a back-up babysitter. Other examples of contingency plans were (1) keeping emergency phone numbers handy, (2) keeping spare cash handy for unpredictable emergencies (e.g., having no paycheck at the end of the month), or (3) always having coins to use in a pay-phone if one got stranded.

Vital Number Skills Module

In this module, literacy and numeracy were taught within the context of their application to tasks that were part of employees' jobs. For instance, in one session we attended, the focus of instruction was on reading and writing whole numbers, especially with regard to writing checks. Additionally, common errors in spelling words such as *forty* (often misspelled *fourty*) were discussed.

In one exercise, the instructor read numbers aloud to trainees, who wrote each number down first numerically and then in words, ensuring the correct spelling and use of hyphens and commas. The numbers were 48; 8306; 99; 1907; 1612; 777; 206001; 10909; 2808498; and 433805. The last number, for example, would be 433,805. In words, it would be written as "four hundred thirty-three thousand, eight hundred five." On completion, the instructor went over the exercise with the students, who made necessary corrections. Finally, the rules governing the writing of numbers were reviewed and stressed.

In another exercise, rules for writing a check were taught. The following are examples:

1. Place a hyphen between the words that represent numbers between 21 and 99 (e.g., twenty-one, forty-five, eighty-nine). There is no hyphen in *one hundred*. The number "129" is written as "one hundred twenty-nine."

2. *And* is not used when writing whole numbers. For example, "345" is written as "three hundred forty-five," and not "three hundred and forty five."

The class sizes were small. In the problem-solving session we attended, there were four participants; while in the math refresher class, there were five. The instructor said she had no way of telling how many participants out of the total enrollment would turn up for a given session. There was no evidence that poor attendance bothered the management. But if poor attendance was not a bother, then how much faith did the management really have in the training in the first place? And if they were indifferent to poor attendance, what message would that carry to workers about the relevance of the training? And what would be the rationale, then, for the state to invest in such a project? Still, an advantage of the small number of participants was that all were able to receive individual attention. Although the workers were actively engaged in the class and shared examples from their work or home settings, their enthusiasm appeared to be low.

A feature of this session was that the trainer placed much emphasis on self-improvement in areas beyond the work context. For example, she encouraged participants to use NovaNet (formerly known as PLATO), the computer-assisted learning system, during their spare time in order to improve their skills and knowledge. NovaNet was available at the bank, and a tutor was available three times a week to assist employees, particularly those seeking to upgrade skills such as math. The courseware available on NovaNet was generic—not specific to the bank. The instructor also encouraged participants to pursue courses at a nearby community college in order to gain credit towards future promotion.

Characteristics of Participants

Employees in the NEET program consisted of clerical staff, mail room staff, and drivers. Those observed were clerical staff. We were informed by the trainer that a high school diploma was a requirement for employment on the clerical staff, so all trainees had been through high school, even if test results indicated that their actual skill levels were at eighth grade or lower.

Program Evaluation

Evaluation of the NEET program was implemented at three levels: (1) learner reaction, (2) learning, and (3) transfer of learning to the job. Trainees were asked to complete reaction questionnaires at the end of the course. Learning was measured using a customized test designed for this specific program by WEC. A posttest was performed using the TABE in order to satisfy state requirements. During the course of the training, the program coordinators talked to the trainees' supervisors to try to determine the extent to which trainees used their newly acquired skills on the job.

Trainer's Background and Disposition

This trainer had a liberal arts degree and brought to the WEC team experience in the banking industry and in computer applications. She strongly believed that work skills could not be separated from life skills. Her teaching indicated that she viewed the learning process as an empowerment process. As Gowen (1992) points out, the philosophy and disposition of trainers have much to do with the nature of the workplace literacy curriculum. The natural tendency in such programs, consistent with the functional context paradigm, is to assume the point of view of the employer. When the stance is from the point of view of the worker, as in the case being described, the emphases change. The curriculum becomes subversive. Workers are sensitized to their standing and to their possibilities. The disposition of this particular WEC trainer can be gleaned from the following anecdote she related:

> Earlier during the literacy audit, we noted that there were forms that employees had to fill out regularly, on which there were several abbreviations. When we tried to find out what these abbreviations meant, we found that supervisors did not know! When the course started I got them [trainees] to find out what these abbreviations mean. Now they know. When others [those not in the program] need to know what these things mean, they know who to ask.

The trainer repeatedly emphasized to the trainees that if they had any ambitions of advancing on the job, they would be well advised to learn all and every job detail such as those abbreviations because, according to her, they would need the knowledge if they were to be able to train their own people when they became supervisors themselves (implying that this should be their objective). To this trainer, knowledge is acquired in order to confer power upon the worker. As discussed above, some of these ideas became interwoven into her teaching, within the framework of worker empowerment.

Summary/Reflections

Evident from the above description is that WEC embarked upon a course of action in the NEET project that in its outlines did not appear to differ materially from that offered either by Redwood Technical College (Case 1) or North Oaks Technical College (Case 2). This provider had learned how to collaborate with industry and had mastered the technology of the literacy audit (e.g., on-site visitations, job-shadowing, task analysis, testing, and functional context curriculum). To be resolved, then, is whether such a provider poses a serious challenge to claims of uniqueness or of comparative advantage that can be advanced by vocational institutions. At a minimum, the answer here will have to take into account the important factor of cost effectiveness. Furthermore, much will depend on resolution of the issue as to whether technical training should be factored into the workplace literacy equation.

CASE 4
A HOTEL ESL PROJECT FOR IMMIGRANT SERVICE WORKERS

The Problem

This client is a four-star hotel situated in the downtown area of a major metropolitan city. The hotel is part of a large international chain. This location employed approximately 1,500 employees, 350 of whom were housekeepers. The employer recognized a need for a workplace literacy program when the majority of the housekeeping staff shifted from American to immigrant, mainly Mexican women. Most spoke English only haltingly. A small number spoke virtually no English. The employer estimated that about 60% of the housekeepers required training. Most of the people who supervised the housekeepers were native English speakers who spoke little or no Spanish. There was a clear occupational hierarchy, premised along immigrant/nonimmigrant lines. Housekeepers were often unable to communicate with their superiors or to report such things as a leaking faucet, torn drapes, a broken lock, a burned-out light bulb, or a stain on the carpet.

The Job Context

The duties and responsibilities of the housekeepers included cleaning the hotel's guest and meeting rooms and hallways; keeping an itemized record of the sheets, towels, and cosmetics that are dispensed in guest rooms; keeping a record of their work time; reading their daily work assignment sheets and weekly work schedules; and filling work orders for broken items in need of repair. They were expected to know and obey hotel employee regulations such as which entrances to use during working hours, areas of the hotel that they were prohibited from entering, and how they should walk down hallways when in groups. The housekeepers' work frequently brought them into close contact with the hotel guests, to whom they often could not provide answers to basic inquiries because of their limited-English proficiency (LEP).

The WEC initiative was designed to teach them to use English well enough to communicate with English-only speakers, to read work-related documents such as daily work assignments, to report broken or malfunctioning furniture or equipment, and to comprehend customers' requests for services.

Solution to the Literacy Problem

The employer sought to resolve the problem through training in the form of a workplace literacy program that would teach the housekeepers to use English in the context of their jobs. Since it did not have its own capability, the hotel contracted with WEC to conduct the initiative. A proposal to conduct a *Housekeepers English Language Program* was prepared by WEC staff, and submitted to the State Literacy Grant Program (Office of the Secretary of State). The proposal won a grant of $10,000.

Literacy Audit

After funding was received, WEC staff began their four-step implementation process: (1) literacy audit, (2) participant recruitment, (3) curriculum development, and (4) instruction. An extract from an interview with the program instructor/coordinator provides a glimpse of the processes that occurred before instruction began. This staff person was chosen for the instructor/coordinator role on the basis that she was fluent in Spanish.

> *Researcher*: How was the program planned?
>
> *Instructor/Coordinator*: We normally decide who the target for training is and how many people are involved. After this was done, we conducted a literacy audit including assessment of employees.
>
> *Researcher*: What is involved in a literacy audit?
>
> *Instructor/Coordinator*: We talked to the HRD people and four or five key persons in management in order to find out what their goals were and understand the problem better. We interviewed supervisors to identify problems that the housekeepers had and get to know what the housekeepers' work was all about. We looked for very specific answers.
>
> *Researcher*: What about the assessment?
>
> *Instructor/Coordinator*: We had a one-on-one interview with every employee that was interested in the program. The interview lasted about twenty minutes and was conducted using the FSI (Foreign Service Institute) oral interview format. We counseled employees regarding their skill level and gave information about community adult education services when necessary.
>
> *Researcher*: What happened next?
>
> *Instructor/Coordinator*: I followed a housekeeper around to see what they do. After the interviews and my observation of the actual job-tasks, I came up with a list of competencies. What we do is look at each competency and decide what skills are needed in order to carry out the task involved in the

> competency. For example, we might decide that some basic math is needed in order to perform a certain computation on the job.
>
> I am the coordinator of this program. I am also the instructor. Sometimes we hire part-time instructors for a specific program. In some programs, the instructor and coordinator may be two different Center staff. I prefer that the instructor be present during the literacy audit so that they may observe the real context and be better able to understand the employees' needs (instructor's clarification). After the audit I went back to the office [WEC] and came up with about twelve competencies. I then went back to the supervisors and consulted with them regarding these competencies. They okayed them.

Of note here is that the literacy audit in this program was performed by the assigned instructor. The instructor explained that it was important that the person who is going to provide the instruction be involved in conducting the needs assessment and basic skills audit because to do so increases her or his understanding of the context of the worksite. This seemed to be a useful insight.

Identification of Competencies

Based on the information gathered from the literacy audit, the WEC staff identified twelve competencies that served as bases for the general objectives of the initiative. The detailed curriculum was based on these competencies. This list of competencies was presented to the managers and supervisors for their comments. In this program, the instructor reported that the supervisors agreed with her list of competencies. She emphasized that it was very important to obtain the supervisors' support.

Recruiting Trainees

There was no difficulty recruiting employees to participate in this initiative. Of the eighty employees assessed, sixty-nine were found to be in need of training. The program could accommodate only thirty-five, who were selected—after much deliberation by the employer and WEC—on the basis of seniority, a criterion that did not necessarily match the level of need. Being assessed for training was a novelty for these workers, some of whom participated with some trepidation. A staffer pointed out the following:

> Some of the needy employees were afraid to come [for assessment]. These [housekeepers] are the neglected employees in the organization. Higher-up employees are offered excellent training. This kind of training [for housekeepers] is partly to address skill deficiencies and partly PR.

The trainees were grouped for instruction on the basis of their level of English language proficiency (or lack thereof). Three groups were formed using this criterion: (1) beginners, (2) intermediate, and (3) relatively advanced. This case is based on observations on the group which had the least initial proficiency (beginners).

Testing To Determine Specific Needs

To select participants, a twenty-minute interview was held with each of the eighty employees to assess their English language abilities. The oral Foreign Service Institute (FSI) interview protocol was used to obtain a global measure of language proficiency. It assessed five aspects of language: (1) accent, (2) grammar, (3) vocabulary, (4) fluency, and (5) comprehension. The FSI was regarded as a standardized test. The instructor said the following:

> The assessment indicated that there were several levels of English competency. We identified three levels for this program including beginners, intermediate, and relatively advanced. It has been possible to offer courses to different competency groups. The present group were the beginners, although they are now advanced beginners.

Participant Roles

The roles of the employer, WEC, and trainees were spelled out in the grant proposal. The partners were required to hold to these. WEC staff was to provide the overall administrative guidance, collect the data, develop the curriculum, develop the workplace context-based instructional materials, and deliver the instruction. The employer and representatives (e.g., supervisors) were to provide information on the employees, their jobs, and their perception of housekeepers' needs. They were also to provide some job-related materials that the trainer could incorporate into the training. During the literacy audit, it was the employer contact person who scheduled interviews with supervisors and organized the employees for the skills assessment interviews. The following are extracts from interviews with the instructor about participant involvement that provide some insight:

> *On employers*: They like to get credit but do not want too much work. They are tied up by lots of other matters. I am trying to get the Housekeeping Department because they know the real needs as opposed to the Human Resource Department who are a bit remote from the realities of the housekeepers' jobs.

> *On supervisors*: Some supervisors are very interested in what trainees learn, but some are not. It is very important to get their support for the program.
>
> *On trainees*: I always ask them what they want to learn.

Though their input was sought, the experience was that, by and large, trainees tended to agree to whatever they were offered at the outset, but as instruction progressed, they would begin to give input and make special requests to be taught what they felt they needed to know. There was evidence of this during classroom observation of instruction.

WEC held weekly staff meetings at its offices to discuss and review the progress of all the workplace literacy initiatives that were in progress. Staff frequently shared information about their experiences at worksites, what they thought they had learned from their interaction with diverse groups of workers, and what they thought the implications were for conducting literacy classes.

Scheduling Classes

Part of the initial agreement between the employer and WEC was that classes would be scheduled during the housekeepers' workday and that the employer's matching funds would cover hourly pay during the classes, the provision of the instructional site, facilities, and the cost of instructional materials. Scheduling the classes during the employees' workday assured good attendance and avoided the need to provide support services that employees may have otherwise needed such as child care and transportation.

The employer took the lead role in deciding when to schedule classes. Based on the volume of customers, the hotel has a high season and a low season. Both were to be avoided. The hotel's high season is when the volume of work is such that it requires that all employees work long hours. The low season is when hourly employees are, at times, required to work fewer hours or not at all. Scheduling classes became a search for an intermediate period, neither too busy nor too inactive, a search that was often a source of frustration for the instructor.

The initiative, like others funded through the same state grant program, consisted of nine weeks of instruction for a total of thirty-six contact hours.

The Curriculum

As indicated above, the literacy audit had identified twelve competencies (learning objectives) on which the detailed curriculum was based. These competencies were as follows:

1. Interact appropriately with guests in common courtesy and small talk exchanges such as in—
    - greeting.
    - attracting attention.
    - introducing oneself.
    - expressing welcome.
    - inquiring about intention—time of departure.
    - leave-taking, wishing well, and encouraging return visit.
2. Name supplies used in fulfilling housekeeping functions.
3. Appropriately respond to standard guest requests.
4. Tell guest to call "Guest Request" number when unable to answer questions.
5. Name key objects found in a standard hotel room.
6. Describe daily job duties.
7. Follow instructions to carry out simple job-specific tasks.
8. Give basic directions to specific locations within the hotel.
9. Answer often-asked questions about hotel services.
10. Ask guests for identification when situation calls for such action.

11. Read hotel memos and personal performance evaluations.

12. Read the employee handbook.

By a mapping process, these competencies were translated into a set of teachable skills. This was done by studying each competency and making decisions on the set of skills required to master the competency. These skills were then decontextualized into five categories: (1) reading, (2) writing, (3) speaking, (4) listening, and (5) culture.

WEC has developed the procedures for developing a customized curriculum such as this (Conrath, Jones, Larsen, Locsin, Lynch, Mrowicki, & Schnell, 1991). These procedures include

- using the job-task/basic skills analysis and writing customized curriculum.
- obtaining approval for the list of competencies.
- writing a course syllabus which includes competencies, basic skills, company-specific terms, activities, and resources (p. 33).

These steps lead to a syllabus whose core components include (1) course competency, (2) core basic skills, (3) company-specific terminology, (4) activities, and (5) resources and materials.

The curriculum, which was partly developed prior to the start of instruction, was used flexibly, and allowances were made for additional content or changes in approach during the course of instruction. The most frequent reason for such adjustments was employee needs as perceived by the trainer. The training was highly work-specific, partly due to the funding requirement, partly due to the perceived purpose of the program from WEC's perspective. However, the nature of the skills that were to be addressed made it easy for the trainer to select illustrations that were relevant both in the trainees' personal lives and the workplace. The following excerpt of conversation with the instructor/coordinator is illustrative:

> *Researcher*: Do you include life skills in the curriculum?
>
> *Instructor/Coordinator*: The curriculum is very work-specific. We are sensitive about this because the employer is paying the employees to attend

> class. However, the work here is easy to relate to the home environment because a hotel room is very similar to a bedroom. A bathroom at home is much like the one in the hotel. They [trainees] learn things that are also relevant to their private lives. Curriculum materials are usually not all completed in advance of the course. It has been the hope of the Center [WEC] that packaged materials could be used, but so far we haven't succeeded. It is still necessary to custom-produce materials for each program. We use some commercial materials like picture dictionaries.

Instructional Approach

Typically, classes we observed started off with informal conversation about the employees' jobs and homes or about a general topic such as the weather. Large group instruction was the prevailing mode; however, it was often supplemented with individual work. The lessons were structured into segments, each lasting about fifteen minutes. Each lesson was similar in format and technique. The trainer presented a picture of a hotel room to every trainee. The objects in this picture were numbered, and below the picture each was named. They included items like nightstands, quilts/comforters, doorknobs, and headboards. The trainer would say the name of each object, then ask the trainees to repeat after her and to match the word with the corresponding item in the picture. This part of the lesson combined vocabulary with pronunciation. The trainer used a question-answer method extensively, asking each trainee in turn, "What is number ____?," and so on.

Using the same picture, she went on to discuss the position of objects in relation to others, asking, for example, "Where is the night stand?" The trainees seemed to have some difficulty with this aspect of language and with constructing answers like "behind the bed" or "above the sink." The younger employees seemed more willing to answer questions than the older women, who were shy and did not want to make mistakes that had to be corrected by the trainer.

Another exercise consisted of written statements that matched with drawings or pictures. The session would proceed as follows:

> *Instructor*: I want you to read the statement below each picture and tell me whether it is true or false. For example, the first one says, "There are four tooth brushes in the holder. True or false?"
>
> *Trainee*: True.

In a third activity, the trainer gave the trainees the following list of words related to the workplace:

Broken
Out of order
Messy
Dusty
Damaged
Stained
Noisy
Slippery
Missing
Torn
Wrinkled

She said each word in English and asked the trainees to repeat after her. The trainees did not know the meanings of some of the words, so she explained each and asked them to mime their meanings, for example: "smelly" (hold your nose), or "noisy" (cover your ears). Some trainees also had difficulty with pronunciation and so the trainer spent some time getting them to repeat the words several times. We observed that by this point in the lesson, a few trainees had begun showing signs of tiredness, evidenced by yawning. The more lively trainees, however, were quite enthusiastic and seemed to enjoy the activities.

Next, the trainer asked the trainees how they cleaned bathtubs. Through repeated questioning, hints, and suggestions, the class came up with a list of steps describing how to scrub a bathtub, a task that was part of their job description. The session went as follows:

> *Instructor*: How do you clean the bathtub in the room? What do you do first?
>
> *First trainee*: You put soap on the green pad, then scrub the tub.
>
> *Second trainee*: You put on plastic gloves, then put "Softscrub" on the green pad.
>
> *Instructor*: Do you wet the green pad first?
>
> *First trainee*: Yes. You wet the green pad, then put "Softscrub" on it.
>
> *Instructor*: Then what do you do next?
>
> *Third trainee*: You turn on the hot water faucet.
>
> *Instructor*: So, first you put on plastic gloves. Let's write this. First you put on plastic gloves. Then you wet the green pad. Then you put

> "Softscrub" on the green pad. Turn on the hot water faucet. What happens next?
>
> *First trainee*: You scrub the tub, then rinse it with water.
>
> *Instructor*: OK (writing on the white board). You scrub the tub, then you rinse the tub with water. Do you do anything else?
>
> *Fourth trainee*: Yes. You have to dry the tub.
>
> *First trainee*: You dry the tub with a hand towel, then put a bathmat on the tub.

Eventually, after many interjections and probing by the instructor, a procedure for cleaning the tub was obtained. This was written on the board, and trainees took turns reading through the list with the teacher (and other trainees), correcting those who had difficulty pronouncing the words. The sole Tibetan student sometimes answered questions in Hindi, causing others to ask her to repeat the word and explain its meaning in English. The others seemed interested in her language and made efforts to teach her Spanish words. This side exchange became a part of the lessons, though the teacher was not involved in it. Many times there was some cooperative learning, with less proficient trainees asking others the translation of a word from Spanish into English.

During the fifth part of the lesson, with the trainer's assistance, the trainees each drew a labeled diagram representing a vertical section of the hotel building. She then asked them to point to the locations of various places such as the Plaza Level or Ballroom. When they were fairly confident about these locations, the instructor took up the role of a guest asking directions. For example:

> *Instructor*: Excuse me, where can I get a hair cut?
>
> *First trainee*: Go down to the Plaza level. Walk through the Green Tunnel to the other wing of the hotel. There you will find the Business Center. There is a barber there.
>
> *Instructor*: Where can I find a cash machine?
>
> *Second trainee*: Go down to the Concourse level. You will find a cash machine near the elevator.

The role-play ensured that each trainee got an opportunity to practice her skills and improve her knowledge of the geography of the hotel. Many needed guidance as they attempted to give directions. Some of the directions were quite complex. The more complex they were, the less fluent the trainees' responses became as they paused to picture the directions or find the right words and phrases. It was apparent that many of them were pleased by this new skill they were acquiring. The last few minutes of the lesson were spent in review.

In another lesson, the trainer presented picture stories and had the trainees explain what was happening using complete sentences, or asked them to identify a problem depicted in a picture. These illustrated problems included a leaking toilet, a torn curtain, a burned-out ceiling light, and so forth. In all such instances, the trainer taught pronunciation, meanings of words, vocabulary, correct spelling, and correct ways of saying and reading things to ensure that each trainee was understood by others and could read and understand instructions, signs, and so on.

While instruction was delivered in English, to enhance understanding the teacher sometimes allowed brief conversations in Spanish which all but one participant spoke. The instructor was fluent in Spanish. In one unit in which trainees were taught how different hangers matched with different garments, the names of items of clothing were written below the drawings of hangers in both languages. For example: blouses—*las blusas*; jackets—*los sacos*; skirts—*las faldas*. The instructor said that this approach is sometimes needed to help students make the transition between the two languages.

The instructor had collected some job-specific material and scenarios from supervisors, and these were used in language instruction. For example, the following list of bathroom rules was used during one of the lessons on reading:

1. The ashtray should be in the corner of the counter to the right of the sink.
2. The bathroom garbage can should be centered in a box tile on the floor, to the left of the toilet.
3. The toilet seat should be up.
4. Always make sure your shower head is pointed toward the wall.
5. Four hooks should be on the left, four hooks in the middle, and four hooks on the right of the curtain rod.

6. The "H" and "C" on the faucet knobs should be straight up and down so they are easy to read.

At times content was introduced by trainees. For instance, students often identified words encountered in their work environment for which they did not know the meaning. The meanings of these words or phrases were identified in class (e.g., "The elevator is out of order."), and students practiced using them in sentences about job-related situations.

Performance Assessment

The state-mandated pre-/posttesting was performed using the Foreign Service Institute (FSI) oral interview which, as explained previously, yields a global measure of language proficiency by assessing five aspects of language: (1) accent, (2) grammar, (3) vocabulary, (4) fluency, and (5) comprehension. Beyond the FSI, informal assessments based on comprehension of job-related materials were used throughout the program, especially at the end of each unit. Units were organized around the objectives and competencies. The trainer gave a mid-course test in which the trainees assessed themselves. This was intended to enable them to identify their particular strengths and weaknesses.

The following "fill-in-the blanks" exercise titled, "How To Clean the Bathtub," was administered following the language proficiency lesson:

How To Clean the Bathtub

1. Put on plastic ________________.
2. ____________ the green pad.
3. Put "Softscrub" on the green _____________.
4. Turn on the hot ______________ faucet.
5. Next, ______________ the tub.
6. Rinse the tub with ________________.

7. _______________ the tub with a hand towel.

8. Put _______________ on the tub.

This type of informal assessment of trainee language proficiency achievement was used regularly and was designed to suit job-related tasks. A more formal customized pre- and postassessment was used at the beginning and at the end of the course to measure learning based on the twelve competencies. The trainer explained that assessment in ESL was more difficult than, say, math, because of the problem of specifying the required standards in easily measurable terms. She said that language is principally a speech skill which is more subjective in nature than other basic skills with which WEC deals. Other issues about measurement of learning are brought out in the following comments from interviews with the instructor:

> *Researcher*: How do you assess how much learning has occurred during the program?
>
> *Instructor/Coordinator*: We prefer to use customized tests for our own purposes, though state and federal funding mandate the use of standardized tests. Customized tests are based on company materials. It is difficult to get the grade level for customized tests. The state has its recommended tests for math, reading, and so on. I like to give a midterm test which I may or may not correct. It is intended for self-assessment of trainees. I feel that pre-/posttests encourage teaching to the test. What if needs change? I like flexibility.

The Participants

All of the participating trainees were immigrants. The class was made up of eight Mexican women and one Tibetan woman. All except two were married. They had received very limited education in their native countries, usually up to the level of lower elementary school (third to sixth grade); therefore, in most cases, they could not write well even in their native languages. One of the participants, despite having been in the United States for twenty-five years, spoke very little English. Spanish speakers in this city were served by a Spanish cable channel and a Spanish FM radio station. As the instructor explained:

> There is a self-contained Spanish community in ______ [name of city]. They can go literally for days without hearing a word of English. I only

> hope they have English speaking neighbors. I like mixing people up and getting them to interact.

Since the Mexican women lived in a Spanish neighborhood, they could literally function without hearing a word of English. This meant that they needed English only at the workplace. However, some of the women reported language problems at their children's school and at the stores.

Three of the participants dropped out of the class for reasons that we were not able to determine. Usually, two to three trainees were missing from each class session, mainly because work was not offered on that day due to few guests. When they were not on duty, some did not attend the classes; others, however, attended even on their days off. Hence, attendance seemed to be tied to the volume of work at the hotel. It was difficult in these circumstances to believe that the training was viewed as important by management.

The following two situations were recounted by the instructor about some of the difficulties that were a direct consequence of the hotel policies:

> *Incident one*: The women come in or go out through the rear entrances. They are not allowed to move to certain areas. As a result, when guests ask for directions the employees will often reply, "Don't know," because they do not know the geography of the hotel well. One of the first things we did with the group is take a tour of the hotel. The management were amazed that the housekeepers knew so little about some parts of the hotel.
>
> *Incident two*: There was an incident that really upset the women. One day when I came in they were all crying. One of the ladies' husband had been involved in an accident when lighting a stove. The stove exploded, seriously burning both husband and son. The husband survived for three hours, but the boy died on the way to [the] hospital. A message was delivered to the hotel about the accident, but the housekeeper concerned did not get the message until the end of her shift. By then it was too late; the husband had passed away. The women were very upset about it, saying that their coworker would have seen her husband alive if only the message had been delivered immediately.

The latter incident brought out some of the inequities that the housekeepers experienced at the job. It emerged that some of these situations were a result of the relatively unassertive nature of the women. The instructor reported that she took this opportunity to motivate them to aspire to better jobs and to learn English as a way to move ahead. A majority had not considered that possibility, which may explain why some of them had not been motivated to learn English.

Support Services

An important support service provided by WEC was to link trainees with neighborhood adult education providers for any additional basic skills training that they desired outside of the planned curriculum. This was done by providing the trainees with information about neighborhood training services, and providing encouragement to give trainees the courage to walk into these places to sign up for courses.

Program Assessment

Program evaluation took the following four forms: (1) participant reaction, (2) participant learning, (3) transfer to the job, and (4) personal use. We report on each in turn.

Participant Reaction

WEC used reaction questionnaires that were completed by the trainees at the end of the course. They were, however, considering the use of alternative means, such as focus groups, to overcome what they called the "glowing rating" syndrome whereby trainees were found to be reluctant to criticize a course or an instructor because they felt that it would reflect negatively on them or their company. As a result, employee responses to the reaction questionnaire were not very useful to the instructor. It was the view of the instructor that in the minds of the trainees, the instructor was always right.

Participant Learning

The state requires that a posttest be done, using one of the state recommended standard tests, but the workplace education provider preferred to use customized tests to assess the trainees' strengths and weaknesses with respect to the desired competencies. This testing was based on job-related materials and was not easy to relate to grade levels. Learning was measured principally by customized testing. The instructor did not favor pre- and posttesting because she felt that it encouraged instructors to teach *for the test* because good test results would reflect favorably on the instructor. In addition to testing at the end of the course, the instructor used a midterm test which was often graded by the trainees themselves and was principally designed to indicate the amount of progress made by trainees without being intimidating.

Transfer to the Job

Supervisors were asked to complete evaluation forms as a means to assess the transfer of competencies to the job by judging the change in employee performance with respect to the relevant competencies. Some of the changes noted were not directly related to these competencies. For example, the supervisors (anecdotally) reported a general improvement in job performance which the instructor thought resulted from increased motivation and self-esteem as well as a new determination. Class discussions about promotion and the need to improve one's job position came up when referring to general life and job-related problems. The instructor encouraged the trainees to talk about their life outside the hotel as a way to motivate the learners to put more effort into improving their English skills.

Personal Use

Unknown to the instructor, two of the women were attending additional English classes in their own private time. It amused the remaining women when they noticed that these two were also the only single women in the class. According to the rest of the group, they (single women) had the time because they did not have family commitments.

Summary/Reflections

The hospital services case showed WEC as being in the role of provider of ESL training, working with Spanish-speaking adult students. As Carnevale et al. (1988) note, immigrants constitute one segment of the population that is deficient in basic skills. They also constitute one of the faster growing segments of the American workforce. WEC was, therefore, at the cutting edge of human resource development in the new economy. By showing capability in working with such a population, WEC was illustrating expertise beyond what can normally be expected of mainstream vocational institutions. To claim comparative advantage in the workplace literacy enterprise, these institutions will have to become versed in serving new clientele, many of whom will be non-English speaking.

CASE 5

A WORKPLACE LITERACY-FOCUSED, COMMUNITY-BASED, VOCATIONAL INSTITUTION

Brief History

This case is a description of the workplace literacy activities of the Twin Cities Opportunities Industrialization Center (TCOIC) (actual name), an alternative vocational institution, incorporated in 1966 for the specific purpose of providing job training for the disadvantaged. TCOIC is an affiliate of OIC America (referred to as OIC), a community-based organization. It is located on the periphery of the city of Minneapolis, adjoining public housing projects, a location that in itself bears testimony to its principles. According to its president, TCOIC was initiated by the local religions representing the African-American community, with oversight by the National Council of Churches. The churches came together "with citizens from all walks of life." In keeping with the mission of the parent body, TCOIC set forth, in the words of its president, to "train and retrain poor people for jobs that existed and were futuristic in terms of their longevity. Jobs that were going to last." The approach was to be three-pronged: to train students "academically, psychologically, and technically." This was especially important, because the clientele was to be nontraditional and, for the most part, at-risk. As the president of TCOIC explains, the clientele was to be the economically disadvantaged, whether on educational, ethnic, social, or racial grounds. Corporate partners were sought out from the start and have been an important mainstay of the institution. TCOIC has an annual operating budget of $1.2 million. Of this, corporate sponsors provide $200,000 through donations. Corporations also provide in-kind contributions in such forms as computers and computer peripherals. Throughout its existence, TCOIC has graduated some 20,000 students.

Though it came into existence when the cries regarding the problem of workplace literacy were not as plaintive, TCOIC, because of its basic design, has over the years accumulated much experience in workplace basics programming for a clientele among whom, by the weight of the literature, can be found the quintessentially workplace-illiterate (e.g., welfare recipients, those in trouble with the law, the unemployed, and immigrants). We were attracted to this institution because it seemed to be doing naturally what vocational institutions in the mainstream now had to learn to do—that is, provide basic skills together with technical skills to diverse, marginalized populations. This report provides an in-depth look at how this institution addresses the complex problem of preparing marginal populations for today's workplace. We examine, among other things, its mission, clientele, and processes from perspectives that include management, administrative and instructional staff, and students.

The Concept—What Is OIC?

The original concept of OIC was grounded in African-American self-help, though initiatives were to be open to all. Excerpts from Sullivan's *Build Brother Build* (1969), the document that set forth the OIC concept, reveals some of the original thinking:

> It was going to be necessary to develop a whole new system of prevocational training—a new composite of teaching and social learning techniques arranged into a curriculum. We were going to have to curriculumize (sic) mental initiative by creating a program like nothing that had ever been done before. We would have to prove the years of educational and environmental inadequacies and deficiencies could be overcome in the briefest span of time. The challenge really was to prove that we could make a man or woman feel born anew—almost overnight. (p. 99)

Continuing, Sullivan explains the underlying thinking—the idea of OIC as a training institution:

> The mechanical formula for success is simple enough. Get a man, put him in the feeder, build his ambition, help his attitude, feed him into an OIC skill center, give him a skill, build his self-respect, find him a job, and give him post-training if he wants it—then watch him rise. (p. 99)

As to the nature of the *feeder*, Sullivan explained:

> Essentially, the feeder provides a trainee with learning tools that include reading, writing, and arithmetic—but we never called it reading, writing, and arithmetic. People don't want others to know that they want to learn to read, write, and do arithmetic, so the courses are in *communication skills* and *computational arts*. Those words describe what we really want to do. (p. 101)

It is evident here that this organization was somewhat ahead of its time, targeting a deprived group, and recognizing the link between literacy, vocationalism, and jobs. This fundamental thrust continues to drive TCOIC, whose mission is set forth in its course catalog for 1993-1995 as follows:

> TCOIC's mission is to train and retrain people in preparation for employment and employment advancement with special emphasis on those persons who are not or will not be served by other training institutions . . .
>
> TCOIC operates on the *whole person* concept of service. It is not enough to teach vocational, related education and academic skills. The personal attitude, family, and societal barriers to an individual's success must be addressed to further heighten the learning experience and the capacity for an individual to get and keep a job. (Course catalog, 1993-1995, p. 5)

Staffing

TCOIC is run by a thirty-member volunteer board, about three-fourths of whom are corporate representatives. Many of the major corporations in the state (including the 3M Company, Cargill, and Dayton Hudson) are represented on the board. The remainder includes community members and a student representative. The president reports to this board. The staff includes a vice-president who has responsibility for day to day operations and three supervisors who are responsible respectively for (1) outreach and admissions; (2) supportive services, namely counseling and job placement; and (3) vocational programs, including supervision of all instructional staff.

Funding

As explained by the vice-president of operations, TCOIC has five "primary sources" of funding: (1) JTPA funds, accessed through placement contracts with Minneapolis—TCOIC must place at least 81 people in unsubsidized jobs, in which they must remain employed for a minimum of 183 days (or six months) to meet the performance specifications of the contract (an additional $22,000 per year is available if they overperform the contract); (2) federal grants-in-aid in the form of Pell funds and similar funds available to citizens through the Minnesota Higher Education Coordinating Board (HECB) (if students qualify for either of these types of assistance, it is used to pay their tuition); (3) monies from the OIC State Council, described as "an organization funded by the state legislature to provide technical expertise and money to OICs located in the state;" (4) lease income, through rental of building space in the TCOIC complex to nonprofit agencies, most notably the Minneapolis Public School system (which conducts ABE and GED classes on the compound and which provides basic skills teachers); and (5) contributions from the private sector (comprising about one-quarter of operating costs).

In addition to these sources of funding, TCOIC actively seeks out in-kind contributions from corporations. Exemplifying this is their relationship with IBM, which has supplied two basic skills labs—a Principles of Alphabet Literacy System (PALS) lab, for the teaching of basic literacy skills up to the fourth grade, and an adult basic skills Relevant Education for Adult Learners (REAL) lab, which continues literacy training from the fourth to the ninth grade, leading to the GED. These labs are used to provide prevocational training.

Basic Program and Policy

TCOIC was accredited by the North Central Association of Colleges and Schools as a "special options" vocational school in 1984. It offers three basic kinds of vocational programs: (1) one-semester courses (sixteen weeks) in areas such as building maintenance, general clerical, and hospitality training; (2) two-semester programs for occupations such as accounting clerk, bank career training, and microcomputer applications; and (3) three-semester programs in areas such as executive word processing secretary and microcomputer support personnel.

The president of TCOIC points out that the program has been responsive to change. He noted the following:

> In recent years, as the labor market has changed through the evolution of technology and the advancement of robotics and other technical changes within the world of work, TCOIC changed its program offerings to accommodate those industrial changes. That kind of change continues today. We continue to change to meet the present and future labor market demands as we look at which occupations to train in. But one of the things that has been consistent is our belief that good psychological development, good attitudes, [and] good understanding of the world of work is essential to any kind of technical and academic training.

To operationalize its basic philosophy, TCOIC operates on a continuous admissions basis, a new group of a dozen or so students being admitted every two weeks. All programs are self-paced. As its course catalog points out:

> The Twin Cities OIC recognizes that every adult does not learn at the same pace. Therefore, our curriculum is designed with the individual learner in mind. All courses at the Twin Cities OIC are competency based. While all programs have specific course requirements, students progress through their program at their own pace. (Course catalog, p. 5)

This open enrollment, multiple-entry policy incorporates the feature that a student can stop at any time and return at a later date without having to go over ground already covered. This flexibility synchronizes with the policy that students who find a job in the middle of their training may leave a program without loss of credit. The following exchange with the vice-president of OIC provides clarification:

> *Researcher*: What percent of students graduate, roughly?
>
> *Vice-President*: We place about 80% of the students who graduate from our programs. However, our graduation completion rate generally falls in the 65% range. The reason for that is that many of our students obtain employment before completing the program, you see. So, they do not complete.
>
> *Researcher*: And that's OK with you?
>
> *Vice-President*: That's OK with me because the bottom line of our operation is employment, you see. That's why we're here.
>
> *Researcher*: And they can come back?
>
> *Vice-President*: They can come back and if they stay on the job, say an individual's gone a year for two-thirds of the time required to complete a course . . . if they stay on the job for the 183 days or six months, we award them a completion certificate.

(The reference to 183 days or six months reflects the time frame for successful performance of a JTPA placement contract.)

Another professional reflected upon the open policy as follows:

> Sometimes that very openness causes us some problems that we would rather not have. . . . But it's a situation where that gives the student the flexibility where they can start, stop, start, stop, without having to worry about the fact that I'm stopping in the middle of something and when I come back I'm gonna have to go back five steps because of the fact that I stopped in the middle of this particular step.

This openness reflects an understanding of and sensitivity toward the clientele.

The Clientele

TCOIC's student body reflects the basic OIC mission, which is to train and retrain those citizens who, for a multiplicity of reasons (including low SES, ethnicity, race, and low levels of education) do not find traditional vocational institutions in the state to be a good fit. Indeed, the clientele epitomizes all of the classes of members of the workforce known to be lacking in the basic employability skills that employers want (e.g., Carnevale et al., 1988, p. 6). The 1991 annual report for TCOIC reveals that about three-fourths of the clientele were African American and about 15% white, with the remainder divided somewhat evenly between Asian American, Native American, Latino, and Hispanic. Slightly more than one-half of the cohort tends to be unemployed. A further 40% or so are on welfare. Regarding educational level, about one-third are high-school dropouts. A majority (more than 80%) are between the ages of twenty-two and forty-four.

Included among the clientele are many who have had brushes with the law. Indeed, TCOIC has an ongoing program in one of the prisons in the state. Prisoners are taught job-seeking and job-keeping skills and are encouraged to contact TCOIC upon release. Many do, seeking training and job placement.

> The following exchange captures the philosophy with respect to the clientele:
>
> *Researcher*: Who are your students, and who do you try to attract . . . ?
>
> *Administrator*: We're basically looking at economically disadvantaged students. . . . The ideal student that we would be looking at is a student who has been on some form of assistance (such as AFDC, general assistance, social security) and is presently not in the workforce or has never been in the workforce, with the idea of giving them some basic skills . . . to get them back in the workforce. . . . It's basically anybody that needs some training to get back into the workforce that cannot attack it from a traditional standpoint.

The following excerpt from the conversation with the president also captures the attitude toward the clientele:

> *Researcher*: Can you talk about the clientele that you've attracted over the years and just briefly the makeup of that clientele and why it is that OIC seems to be particularly attractive to the clientele.
>
> *President*: The basic characteristic, the most common characteristic of our clientele is they're all economically disadvantaged. They're all poor. They have other disadvantages also: educational, social . . . I think . . . the people that come here come basically because they can't afford to go to traditional institutions, or they have given up. They don't have faith in the traditional institution. And that is faith in terms of the traditional institution understanding, having the kind of patience they need, tolerance I should say, that these people need in terms of having enough time to do the work, having an instructor that will go over a particular thing over and over again. Not to say that this is the tenth time I'm gonna tell ya . . . say well, if you

> don't get it the tenth time you'll get it the twentieth time. But we're going to keep after it till you get it, OK? We're gonna hang with them. That is a characteristic, I think, that sets us apart. We give them time to learn, to understand, where other traditional institutions are more lock-stepped, as we call it . . .
>
> The other thing about our clientele is a kind of a love association in this organization. Our clients know that we care about them. They are absolutely sure of that. Because we do a lot of things to demonstrate that to them. And when that compassion is there for an individual, you generate a greater possibility of success . . .

To keep in touch with the many communities represented among its clientele, TCOIC has ties with grassroots community organizations. Many of the staff members at the institution reflect the diversity of the clientele. Indeed, a translation service is included among the services.

Services

Initial Literacy Testing

When a student first enrolls at TCOIC, he or she must take the ABLE level-three test. The test is administered either at TCOIC or through the Minneapolis Public Schools. There are four parts to the test: (1) reading comprehension (which is weighed separately), (2) vocabulary, (3) number operation, and (4) problem solving (which are weighed together as a group). Asked why reading comprehension is set apart, one administrator explained that the TCOIC program is "reading intensive." Since the program is competency- based, reading is a big part of it.

If a student's test results place him or her below the seventh grade level in either of these two parts of the test, then remediation is prescribed to help that student upgrade his or her skills. It is here that the prevocational education offered in the PALS and REAL labs comes into play. Both labs are run by the Minneapolis Public Schools, who independently have their own clients on the spot, but also cater to OIC clients. Students who test at the fifth grade or below are referred to the PALS lab. If they test at the seventh grade level, they are given "split time"—that is, they are allowed to pursue a vocational area (e.g., they could work on typing skills), even while pursuing a remedial course in the anticipation of attaining the ninth grade level. It was explained that this opportunity serves as a hook—an enticement that helps to minimize the frustration that students feel having to pursue prevocational studies. Those who test at the ninth grade level get into full-time vocational programs.

The question then arose as to the mismatch between what a student intended to pursue at TCOIC and what the test scores might indicate.

> *Researcher*: But there are some people who want to do something for which they are not suited . . . ?
>
> *Counselor*: Right, then they probably would have had to have taken the ABLE test . . . and at that point we look at the ABLE scores, we can say to the [student], "Your ABLE scores indicate that you are at the fourth-grade or at a fifth-grade level. I have to recommend that you not go into the microcomputer application. It's a lot of reading comprehension. You're not going to get a lot of help from the instructor. He's going to give you this information and you're expected to sort it out. If you can, in fact, improve your reading comprehension skills by going back to the REAL lab and then maybe we retest and you've improved those skills and they're up to at least seventh or eighth grade (because all materials are supposed to be written at a seventh grade level which I think is a state law), if you can prove then that you're up to a seventh grade level, maybe we can take a look at you going into microcomputer class."

Note: About seven in ten students will test at the ninth grade level; two in ten will be at the seventh; and one in ten below the seventh.

Public School Role

Students who test below the seventh grade level are referred to the public schools, who are on-site. The public schools, as indicated above, lease space in the building and run their own program, sharing facilities. They staff the PALS and REAL labs (see pp. 130-132). When students are referred to them, they become public school students. The public schools receive income for their services.

The question, then, is whether this arrangement for dealing with literacy works. Do students in fact raise their grade level in reading comprehension from the seventh to the ninth grade? Do any make the leap from the fifth to the ninth? In a good discussion of this issue, Mikulecky et al. (1992) make it clear that literacy gains do not come quickly. They report that the most effective workplace literacy programs require fifty to seventy hours for one grade level gain. They seem to suggest also that for maximum gain, the reading materials must be work related. Informal conversations we held with Mikulecky (at a literacy conference held in St. Paul) brought out these same sentiments.

As a preamble, it should be stated that instruction in the REAL lab is not done in a functional context. Canned computerized programs are used. But there remains the lure of completing this prevocational program and enrolling in a vocational program.

The following conversations about grade level improvement are instructive. Two views are detailed. First, an administrator is asked about remediation; then a counselor is asked about grade level gain.

> *Researcher*: Now, does that happen? Do people actually improve a grade level here?
>
> *Administrator*: They do. The problem that we have is because of the clientele we're working with. It's not an easy process to go from, especially a very low grade level to a seventh- or ninth-grade level. . . . *It doesn't happen overnight to be very honest with you* [emphasis added]. The folks that we have quite often get frustrated and then we lose a large number, unfortunately. . . . That does not create a great feeder program for us.
>
> What we're looking at is, hopefully, we can help them a little bit this time . . ., and then they may quit and six months later they may come back.

This explanation seemed plausible, and is consistent with the literature as cited above. On this same theme, the counselor told a success story:

> *Researcher*: That seems hard . . . to raise a grade level in reading?
>
> *Counselor*: No, it can be done. I've got people who came to me with a fourth grade education and who had completed their GED and did it in a year's time.
>
> *Researcher*: In about a year or so? . . . In about a year's time?
>
> *Counselor*: In a year's time she went from fourth grade to completing her GED. It can be done. She was here every day, OK! She was absent only when her children were ill. So she was rarely absent. You have to come. OK. And you have to be diligent about what you are doing. You can't come and go sit in a cafeteria and smoke cigarettes for two hours. She really wanted to get this done. She came with a fourth grade level; her sister came with an eighth grade level. She finished her fourth grade level before her sister finished her eighth grade level . . . and got her GED.

> *Researcher*: . . . Some people were saying that . . . that can't be done. You can't raise a reading level. It takes nine months just to raise one grade level.
>
> *Counselor*: That depends on how bad they want to do it.
>
> *Researcher*: So that's a factor then . . . motivation. If somebody really wants to do it, you're saying . . .
>
> *Counselor*: If somebody wants to do it, they can do it.

What the counselor had to say here seemed plausible too. One year of constant study could well lead to gain of the order described, if only because of the supportive climate that OIC presents, and the lure of enrollment in a vocational course that can lead to a job.

The PALS Lab

As indicated above, the PALS lab is primarily for prospective students who test below the fifth grade in reading. Conversations with one of the PALS lab instructors revealed that the lab primarily attracts new immigrants, mostly Asian Americans, who can read and write, but who use the lab to work on their spoken language until they can "communicate in American society." The approach is to allow such students to "feel free to write the way they speak and in the course of them expressing themselves uninhibitedly without worrying about spelling. We can bridge that and talk about what they bring from their country. . . ." When they are able to become conscious of differences in the linguistic patterns between their native language and English, they can become editors of their English. According to the PALS lab instructor, they can "make a conscious choice to adjust."

For students who are trying to get to the fifth grade level of reading, according to the PALS lab instructor, the focus is to help students to become competent enough to "write as well as they speak . . . and also to get a sense of confidence in communication skills. And certainly once they can read and write anything they want to . . . they can make those connections in the work setting." Thus, reading material could be the newspaper, literature—anything of interest to students. Students can write their own stories, then have them converted to standard English. We saw many samples of such stories on display. Many were personal, set in the context of family.

Continuing, the PALS lab instructor explained that the intent is to "help students not be afraid of the written word." The approach is general, not functional, literacy. The instructor reiterated, "The student comes away comfortable using writing for anything they can say; comfortable in learning new vocabulary; comfortable in not knowing everything, and knowing how to learn, how to approach something that they do not know." The instructor gave the following example from the class as illustration:

> We were reading from Robert Fulton's book, *Everything I Ever Really Needed To Know* . . . . This piece was about Mother Theresa . . . really not easy, certainly not fifth grade, maybe about sixth-grade level reading, but we're reading it, and we're tackling it, and the students, they're going at it slowly. If I were to read something about engineering, I would go very slowly . . . and even then I may not have the prior knowledge . . . or the background to understand it.

The message was that it was acceptable to go slowly when one was in an unfamiliar conceptual terrain. We then raised the issue of functional context directly:

> *Researcher (paraphrased)*: In the literature on workplace literacy there is the idea of functional context. I think it means in terms of the workplace that if you are a carpenter . . . why not talk about hammers and boards and the rest of it that's contextually relevant . . .
>
> *PALS Instructor*: If I were teaching at a particular workplace, that's exactly how I would do it in the context of what the student, the worker needs to know [to perform] the job.

She pointed out though that the skills one needs to learn specific vocabulary such as figuring out how a word sounds are the same skills one needs to read a newspaper. The workplace provides a good opportunity to teach literacy, but the aim must be generalization, as the instructor continues:

> I don't know that everybody would agree, but I think [we're] talking about more than just competence in the workplace; [we're] talking about citizenship, we're talking about community, we're talking about parenting, raising a family, talking about attitudes toward self . . . self-esteem.

The instructor opined that literacy pedagogy should "validate the life experiences and the strengths that one brings to this endeavor . . . whether they came from the top of education . . . whether they are not up-to-par, whether they fell through the cracks."

These humanistic sentiments are in keeping with the ideas set forth by Sarmiento and Kay (1990) and by Gowen (1992). They tend to be the literacy philosophy one sees at TCOIC.

The REAL Lab

The REAL lab deals with basic skills in reading, writing, and mathematics between the fifth and seventh grade, leading to the GED. The instructor explains that the math starts with counting and addition. The lessons are canned, but the instructor is on hand for consultation. As with the PALS lab, it tends to attract ESL students for the most part.

The Curriculum

The curriculum of TCOIC issues from the mission statement. As indicated earlier, it looks at "the whole person." As such, it has to be observed in action to be fully comprehended. Earlier, it was pointed out that the program is multileveled—a PALS lab for those deemed to be functionally illiterate, a REAL lab that teaches adult basic skills, and a vocational program that teaches technical job skills. The PALS and REAL labs focus on literacy explicitly, but workplace literacy skills are evident throughout, as will be explained below.

The Core Curriculum

Reading

Since TCOIC is competency-based, an underlying thread in the curriculum is reading. As indicated above, this was a reason for initial diagnostic testing and for setting the ninth grade as the level for full fledged acceptance into vocational programs. The following excerpt from conversation with one of the TCOIC supervisors explains:

> Most jobs nowadays they require . . . they actually think that you're gonna learn it by yourself. And that's kind of the way we're set up . . . is we give you information . . . self-paced booklet kind of form that has emphasis done by the instructors and lecturers sometime. But it's primarily the students. They read the book; they follow the instructions in the book.

Keyboarding

Except for hospitality training, all programs at TCOIC include a basic keyboarding course. This emphasizes the value placed upon this skill. Those in the hospitality program do have the opportunity to gain keyboarding skills in the literacy labs.

COPE

All students at TCOIC must take two credits of Comprehensive Opportunity for Promoting Employment (COPE). This course is offered during the first two weeks of training. Students enter in cohorts of about twelve, and COPE allows them the opportunity to bond—to form a support group. The intent of COPE was explained to us as follows:

> *Researcher*: What is COPE? What does COPE do? What do you try to do in the COPE program?
>
> *Instructor*: Our goal is when a person leaves COPE, they'll be ready for any department in the workforce. What does it do? We try to help motivate, try to give a person self-esteem, try to enhance their listening skills in case they have something hidden like anger, we try to bring that to the surface so they can deal with it. We deal with fear, a lot of feelings, a lot of personal things. They cannot succeed if they have a lot of skeletons in their closet . . . a lot of ghosts hanging around, and so we try to get them to surface those ghosts and deal with them so that they won't use that as a barrier for failing . . .
>
> *Researcher*: And you do not want them to fail at OIC?
>
> *Instructor*: Or anywhere. Not just OIC because once they leave OIC, we want them to succeed in the workplace, because when they look good, we look good.

We probed further about the philosophy of COPE:

> *Researcher*: Now why is it so important with people who come to OIC to be focusing on that whole issue of not feeling?. . . Is there something about the clientele here that you think makes it important that you have that kind of emphasis so early in the program?
>
> *Instructor*: I think a lot of the people we get are not reinforced, maybe in their home. . . . Some of them have not been reinforced or validated in the community, and so when they do something of accomplishment, even when they give a speech, we give them what we call "strokes," and we applaud them. . . . A lot of them come from negative environments and we try to give them a positive setting and let them know that there's another side.
>
> *Researcher*: So right off the bat, you're trying to say to these people that here is a welcoming place? What are you trying to say to them?

> *Instructor*: Well, most of the schools you go to, you go in there and you don't know anyone. We want to give them a support group. . . . If one of the people is missing, someone in their support group is going to call them and say, "Hey, where are you? We miss you."
>
> *Researcher*: So . . . now there's a reason it comes so early in the program and not later?
>
> *Instructor*: Um-hmm. Because we want them to get through school, and many people have not been to school for maybe ten, fifteen, twenty years. And so to get them acclimated to the school setting again, we have COPE. This is like their "dressing up" place. You get used to doing homework; you get used to speaking in front of an audience. You get used to interacting with people of diverse backgrounds. . . . So after they succeed these two weeks, it's not hard for them to do it later on.

As the conversation continued, it became clear that the COPE program bore many of the features that the literature tells us are constituents of workplace literacy, broadly conceived. The instructor explained that occasionally students drop out of COPE (meaning they have dropped out of TCOIC), even though they are only into the first two weeks of the program, such is the volatility of the clientele. She explained that this is preferred, rather than their waiting till later. They can, of course, return if they wish. The instructor spoke of an evaluation at the end of COPE, and we inquired as to its content and purpose. She explained:

> It's an observation, but also you know whether they have a good attitude, whether they try, whether they use a lot of excuses, whether they're on time, whether they take a lot of days off, whether they're going to be a team player, whether they are going to come up to the dress code . . .

As the conversation continued, we asked about this emphasis on attitude:

> *Researcher*: So attitude, punctuality, and regularity . . . being a team player and dressing . . . and being able to blame yourself, if things aren't right?
>
> *Instructor*: And being able to work with anyone, with any lifestyle, any cultural background, and religious background.

This instructor further explained that working with diversity was a major part of the TCOIC curriculum: "Diversity is the theme of our school, I mean, we are a very diverse school." From our observations based on months of traversing the corridors and classrooms of TCOIC, we concur that this is indeed a school of diverse cultures and peoples, more so than any other of the more traditional technical colleges in the state. This very nature of the school engenders outcomes that can be called workplace literacy.

COPE-Plus: Job-Seeking Skills/Job-Keeping Skills

At the end of their programs, all students must participate in COPE-Plus, following a curriculum that includes job-seeking and job-keeping skills. The course includes designing resumes, cover letters, follow-up letters, mock videotaped interviews, and so on. Employers are invited to come in to speak with students. Students go on field trips and get the opportunity to shadow workers. This capstone counterpart to the initial COPE-Plus is intended to round out the attitudinal part of the curriculum.

Dressing for Success

An important part of the curriculum—what one may call the "hidden" curriculum of the TCOIC—is "dressing for success." This somewhat unique aspect of TCOIC curriculum is evident as one walks the corridors and observes students as they pass by. Dressing for success is emphasized early in the COPE-Plus program. The vice-president of TCOIC explained the concept as follows:

> *Vice-President*: We have a dress code for our students with which we try to encourage students to dress for success. Since most of the training that we have involves training for jobs in offices and so forth, we ask students to dress in a professional manner, meaning young ladies in more professional attire, no shorts, no halter tops. Males, we ask that they wear (not so much in the summertime) a shirt and tie along with a jacket for most of the year. We try to discourage students from wearing jeans and the more mod attire that you find people on the street wearing and so forth.
>
> *Researcher*: Well, would you say that this is a part of your curriculum?
>
> *Vice-President*: It is. It's stressed from day one that you dress for success, and we accept contributions from individuals and businesses, wherever, of clothing. We have what we call a clothing shop where students can go in and pick out whatever we have available to help them develop their own style.

The counselor speaks of an entity known as "The Clothing Connection" that for a charge of five dollars monthly allows a student to pick out one outfit per month. They can volunteer one hour in lieu of that money. This focus on clothing is reinforced when corporate visitors comment on the professionalism of students—something that apparently happens frequently.

Technical Offerings

The president of TCOIC explains that, over time, technology (robotics and so on) has forced changes in their offerings. The current emphasis is on jobs that will be around for the next ten years. These are jobs in microcomputing, accounting, secretarial skills, hospitality, and building maintenance. To stay in touch with the labor market, each course has a technical advisory committee.

The vice-president explains as follows:

> Each course has a technical advisory committee. . . . Technical advisory committees are set up for every training area. They are staffed by board members and people from industry. It's their job to evaluate each course to determine what's being taught is relevant and to make certain as closely as possible that each course, the equipment, and the wherewithal to operate effectively. When we find a course is no longer . . . well, when the job market will no longer support the course, we have the flexibility, unlike many of the other vocational schools that are part of the system, the state educational system, we can drop a course on a moment's notice. We don't have a bureaucracy that any other institutions have in terms of being able to change a training area or what have you. When new courses come along, there's a lot of research and development that goes into that course before it's ever started. We make certain that the job market is there, that all the other elements in terms of financing that course can be self-sustaining. So we have a number of courses on the drawing board now that we're considering, and that research and development is in process right now.

The president concurs. He too posits the role of advisory committees in the context of links with industry and the changing nature of the world of work. He explains as follows:

> One of the big things about OIC is that we have this very strong tie with industry, and consequently, we have what is known as technical advisory committees, comprised of personnel directors from the various companies and people from research and development departments from all these companies. . . . These professionals sit on our technical advisory committee and advise us as to what is being researched and what is likely to be a product next year or in the near future. And we train to that product. We train people to service that product, to work on that particular assembly line, market that particular product . . .

Literacy Content

All of the technical courses of study include basic skills. Examination of sample programs help illustrate this. A two-semester building maintenance course appears to be designed for flexibility—a hallmark of workplace literacy. The catalog promises a wide variety of employment opportunities such as caretaking, commercial and industrial building maintenance, landscaping, and maintenance specialties. This flexibility is evident in the curriculum, which includes an array of basic skills courses plus a number of basic technical courses. Thirteen of thirty-six credits are for coursework in English, and one credit is in mathematics. Beyond this, there is opportunity for basic computer competence. The course of study is as follows:

Courses (and credits):

- COPE (2)
- Mathematics for Maintenance (2)
- English Ia—Grammar Extension (1)
- English V—Oral/Interpersonal Communications (1)
- English III—Spelling and Vocabulary Building (2)
- English VI—Business English (4)
- Keyboarding Made Easy (2)
- Introduction to Microcomputers and DOS (1)

To build flexibility into the course, a workplace literacy feature, the course of study presents conceptual courses across an array of technical specialties such as the following:

- Basic Carpentry (1)
- Understanding Basic Electricity (1)
- Electrical Troubleshooting of AC Circuits (1)
- Understanding Plumbing Systems (1)
- Low Pressure Boilers (2)
- Introduction to Air Conditioning/Refrigeration (1)

It also offers courses that transcend technical areas, such as

- Building Maintenance Management (1)
- Reading Blueprints/Schematics (1)

Other courses observed follow that basic format.

Instruction

When one observes TCOIC classes in session, one will notice a lot of small-group activity—with students on task and instructors present. However, the instructors are not commanding the attention of the entire class. Instructors operate from the sidelines—but they remain accessible. The supervisor of instructors explains that some classes are more instructor-led than others. He gave a personal example:

> My intro to DOS class is more instructor-led than any of the other classes that I have. And then on the support side . . . support curriculum, my set-up and installation class is more instructor-led. Otherwise, I basically give them the text, and if you have any questions, if you have any problems, then we get together and go over. But they're just following the text, the examples, and then I give them exercises and quizzes and tests to see how they've picked that up.

In a similar vein, one administrator, cited earlier, indicated that the program is competency-based. Using a lecture style would not work because students are at different places in their competency level.

> *Researcher*: It's hands on?
>
> *Administrator*: Much more hands-on. It's sitting up on the computer, doing the work, with the instructor being basically in the class. . . . So if a student runs into a problem where they don't understand something, then it's strictly a one-on-one situation as opposed to being a classroom situation.

Competency-based instruction means that often students in the same class are more or less advanced than others. In one mathematics class we monitored, students clearly were at different places in their competency level. They came to the instructor individually as needed. There was no group recitation. The communications teacher pointed out with respect to her classes that "everybody is in a different place; they work at their own level and their own pace. So you don't have everybody in just one English. You've got various . . . levels of English . . . in the same class." This is the norm at TCOIC—an instructional approach found at only one of the mainstream technical colleges in the state.

Giving Them Time

As indicated above, the president of TCOIC stresses that the institution is prepared to go the long haul with students—that it is prepared to give them time. There is theoretical support for this policy, set forth by John Carrol (1963). Certainly, time is a major factor when addressing the problem of workplace literacy. As Mikulecky et al. (1992) point out, time is crucial if one wants to show grade level gain in reading or any other literacy skill. From an instructional standpoint, it can make all the difference for students who have not had histories of academic success, or who must try to negotiate a second language. This philosophy of giving time is exemplified in the following story told by the communications instructor, which explains the special problem of teaching oral and written communication skills to Asian immigrants:

> I helped a girl yesterday. . . . This is after four o'clock. I had other things I needed to do, but she wanted some help and she was writing a letter to a friend back in Laos. She said, well, I would like for you to help me . . . to see if I have it worded right and spelled . . . right, and so I did. She did quite well. So she's practicing her English in sending a letter home to her country in English.

This story is in keeping with the value assigned to giving students time as they negotiate literacy.

Functional Context

We saw a mixture of functional context and general literacy at TCOIC. In a mathematics class we sat in on, the examples were from the business world—calculating sales and stock reports. But there were also many math exercises that presented general problems, not necessarily workplace-related, though practical. In the communications class, the instructor used workplace relevant examples but did not feel confined to them. She explains as follows:

> We can't only deal with terms that will be found in the workplace. Spelling . . . we might also deal with terms that sometimes people just take for granted . . . even abbreviations. We see a lot of them. . . . We might take a list of abbreviations that people don't know about. For instance . . . they see common stations on the television, this is CBS. Well, what does CBS stand for? Some people don't know that zip . . . you know . . . you put your zip code . . . "Zone Improvement Plan." You might not read that in a book, but there's things out there you know, I'm trying to make them aware [that] . . . words are around us all the time. . . . I try to make it relevant to everyday life, to the business world, to home life, school life. Language is rich.

This teacher was prepared to use newspapers, magazines, billboards, whatever, to get the point of reading across—to foster literacy.

What's critical here, then, is not direct connection with work, but the *vocational hook*. The fact that a reading lab is down the hall from a computer applications lab or a building maintenance lab, and that one can go from the one to the other, makes all the difference. A student may be pursuing fifth grade math in the lab today, but the reward is enrollment in a computer class that's clearly accessible, once remediation is complete. This vocational hook may be acting as a sort of proxy for functional context.

Placement—Skills Employers Want

As indicated, OIC is job-oriented. All of its efforts are focused on employer needs. Since much of its funding depends on placement, it spends more time on job placement issues than the traditional technical colleges in the state. As the vice-president of TCOIC notes, 80% of students are placed. We were interested in their interpretation of the skills employers want, how TCOIC comes to know about these on an ongoing basis, and how they respond to these needs in the curriculum. We spoke with the placement officer in an effort to gain insight here.

> *Researcher*: What do employers say to you, what do they want, and how do you try to meet that?
>
> *Placement Officer*: Basically what they look for is a person who is trainable, someone who is computer literate. Someone who has business-writing skills. Those are your basics, what they are looking for . . . .
>
> *Researcher*: So you are saying that the employees do not only want this skill, whether it's typing or whatever, but they also want somebody who is trainable and computer literate and who has business-writing skills. Are they saying that?

> *Placement Officer*: Yes, especially for this secretary part. If you are asked to write a letter or if you're asked to do some sort of correspondence, then they would have to, of course, have some sort of writing skills, and I get a lot of those jobs that come through here. Sometimes that's what stops a lot of people from getting jobs. You know, some of their writing skills and their communication skills also . . . stops them from getting the job, from becoming marketable.

"Trainability," then, in the placement officer's estimate, was the value that employers emphasize. This called to attention the question of transfer—a hallmark of literacy. We probed along this line, as the following dialogue indicates:

> *Researcher*: What does OIC have to do, I wonder, to make people know that, at least . . . that employers want people that are trainable . . . .

> *Placement Officer*: What that means is that in addition to you learning your basic skills here, that it may not necessarily be the same thing you learned on the job. So you'll have to be able to say if you can do ten-key, you can type. But Norwest wants somebody to be a proof operator, which is something totally different than what we have taught you here . . . I mean, just different types of information that you have to put in, the speed, things like that. Well, it's not set up that way here . . . but if you can type 91 strokes per minute . . . and if you can type 35 words per minute (that's basically what they learn here) . . . they'll take those two skills together and teach you to be a proof operator. So that's what I mean by being trainable on a position.

We were curious about how matches were made with employers. How did the placement officer decide which student would be suited to which employer who had made a request? When asked about this, the placement officer spoke of evaluating students based on informal conversations and observations over time. She spoke of looking at their records. When asked the question, "What do you look for?" the placement officer indicated the following:

> Basically I look for attendance. I look for their skill level. I look for advancement, from the time they walked into the door until the time they kind of finish up. I look to see what their progress is . . . to see how literate they are, you know.
>
> I basically watch for that, and what I normally do is I talk with a student and I talk with him on a number of occasions before I decide which category I'm going to put him in. But I don't ever go by paper. I sometimes try to, you know, make sure I get to know the student well, find out what they're looking for, get to know a little bit about their home life, too . . . and I usually try to listen for complainers, people who complain a lot. Those

> really aren't the people you want to refer for jobs. I mean, I will find you a job, but it may not be the job you want. And I'm real strict about that.

This placement officer spoke about the COPE-Plus program that comes at the end of programs. She was going to be the instructor, teaching job-seeking and job-keeping skills. The curriculum would entail the following:

> *Placement Officer*: I'm going to be . . . having a class that's every day, starting September . . . an hour a day that will cover the résumé, the cover letter, the thank-you letter, the interviewing skills, job problems, I mean the whole nine yards. I mean professionalism. The things that you would encounter on a job.

We examined samples of job postings linked to recent requests made by employers to OIC, in order to grasp some of what the placement officer was observing. One job posting for a clerical/receptionist, a job that offered $6.00-$7.00 per hour, required the following:

> Qualified candidates will have good communication skills, previous clerical and receptionist experience, accurate typing skills, and be attentive to detail. Prefer some knowledge of dBase.

Another request from the same employer, this time for a clerical/office assistant, required the following:

> Qualified candidates will have previous clerical and receptionist experience and knowledge of WordPerfect 5.1, Lotus, and dBase programs on IBM compatibles.

A request from a second employer for a "Class B secretary" had the following "minimum requirements":

> Ability and desire to use a microcomputer. Excellent written and oral communication skills. Well-organized and efficient. Accurate, with close attention to detail. Ability to work with minimum direction. Ability to work on more than one project at a time.

These few examples illustrated points the placement officer was trying to convey to us. These workers had to be computer literate. They had to know at least one application. They needed to be able to communicate orally and verbally, to pay attention to detail, to be autonomous. Clearly the literacy needs here were high. TCOIC understood the sector of the labor market in which they had specialized and appeared to have aligned their curricula with the skills that employers in that labor market segment wanted.

Voices of Students

We sought to learn more about the TCOIC experience by listening to the voices of students. As indicated above, the student body is ethnically and racially diverse. We tried to speak with a cross section of students, mainly to hear their stories of what led them to OIC, what their goals were, and so on.

Mike

Mike is an African-American male. He reported that he came to TCOIC because

> all the jobs I've had have been dead-end jobs, and I was . . . going nowhere . . . . I wasn't getting nowhere. I was not climbing nowhere, you know, so I decided to come here . . . .

He explained that he was a high school graduate. The jobs he had since graduating included sorting and delivering fabric, cleaning downtown offices, and dishwashing. He enrolled at OIC, financed via a Pell Grant, passed the ABLE test at the ninth grade level, and was accepted into the one-year microcomputing program.

At the time of the interview, Mike indicated that his courseload included data entry, WordPerfect, office procedures, math, English, and typing. He had been in the program for five weeks. He had been through the COPE-Plus class and had been assigned a counselor.

In the math class, Mike was studying decimals and percentages. He said that although this was a refresher course for him, it was needed. He hoped he could finish the course. From what he had been told, a recruiting employer would visit TCOIC, and there was the likelihood that he would be hired. He said he was hopeful about employment prospects and getting out of the cycle of dead-end jobs.

Judging from his difficulty with standard English, Mike appeared to us to be some distance from meeting the communications skill requirement of most employers, especially in environments requiring computer expertise. But this was early in the program. The TCOIC curriculum would present many opportunities for him to practice and at least become aware of his deficiencies in communication skills.

Harry

Harry was also an African-American male. He had a job driving for a courier company. He had received tickets for driving violations, and he had suffered an injury in an accident. Now that he wanted to reenter this former occupation, his telephone calls were not being returned. He decided to enroll in the building maintenance program at OIC because it was consistent with his prior training in carpentry. He had attended classes for six weeks. He tested well on the ABLE. Harry described a day in his life at the school. His first class was typing. His second hour was professional writing on the computer. His third hour was mathematics. After lunch, he again had mathematics, and the remaining time was devoted to building maintenance. Harry said he took typing to gain keyboard skills which he needs for working with computers. He explained his choice of building maintenance and his prospects as follows:

> I like choosing a skill or job that I know will stay in existence forever or until my life span is over with, you know. So that's why I chose buildings . . . people have to be housed. . . . So I chose Building and Maintenance as a means of going anywhere in the country, anytime, to get a job across the U.S.

This seemed to us to be remarkably astute labor market sense. He spoke of taking coursework in computers so that he could become multiskilled: "I might get tired of building and maintenance one day so by me being exposed to computers right now, I could be [a] computer programmer, processor, (whatever), maybe."

Lin

Lin was a Taiwanese national. She enrolled at TCOIC because she was having difficulty finding a job. She surmised that this was because of her poor facility with English. She had a close friend who had come to OIC and had found a job. This was her hope. She came to OIC and was tested and performed well. She was taking a course in accounting at OIC. She was simultaneously taking an ESL course in one of the public schools in the evenings. Since she had experience as a secretary in Taiwan, she had found a job as a bookkeeper and was working at the time of the interview. She valued the experience, but did not plan to keep the job very long. She was going to graduate in a month's time but would be taking two extra computer classes. She planned to forego trying to get a job in accounting for one year and, instead, to enroll at one of the city's mainstream technical colleges.

She was of the view that OIC had provided her with valuable computer and English skills, along with helped her break down the culturally imposed walls that had inhibited her communication with others.

San

San was from Laos. He had heard about TCOIC through a friend. He tested in math and English and was pursuing a course in microcomputer applications at the time of the interview. He would graduate in two months but was planning to take another course. At the time of the interview, San had been working at a part-time job at a fast food restaurant. His job was to take orders on the telephone.

Gloria

Gloria was from the Dominican Republic. She was brought to OIC by a relative. She tested in English and math, went through the COPE-Plus program, and then chose the general clerical option. English did not prove to be an impediment for her, since she had studied it for two years or so in her home country. At the time of her interview, she had been at TCOIC for less than a year. She planned, upon graduating, to get a data entry job at a bank. When asked what skills she would need in order to find such a job, she explained that she had "WordPerfect, data entry . . . recordkeeping, graphics, English 1, Math 1, keyboarding . . . and DOS." Gloria was seventeen.

Summary/Reflections

When the activities of TCOIC are juxtaposed against hypotheses set forth in the conceptual framework of the study, which is to consider claims of a comparative advantage in the workplace literacy enterprise, the following appear to be the strengths of the institution:

- It specializes in clientele among whom the basic skills problem is known to be rampant (e.g., immigrants, welfare recipients, the unemployed).
- It has a tradition of working collaboratively with industry to derive workplace-based curriculum.
- It offers its clients not only initial preparation for the workplace, but also programming geared to lifelong learning.
- It has the capability (highly trained staff and equipped laboratories) to teach not only those basic skills that traditional vocational schools tend to offer, but also has a facility in the teaching of reading.
- It offers basic literacy programming in close connection with technical skill training.

Other factors which appear to situate this institution well within the context of the workplace literacy enterprise are its strong ties with the inner city community in which it resides and the human face that it shows to its clients.

REFLECTIONS, CONCLUSIONS, AND RECOMMENDATIONS

We set out in this project to attempt to understand workplace literacy programs better by examining five selected cases in detail. Our interest in such programs sprung from the fact that they have become ubiquitous, a new addition to the vocational education and training landscape. The view of them as a key to improved economic competitiveness is evidenced by the strong federal stake in their efficacy, operationalized in the form of the National Workplace Literacy Program. As two of the cases we have discussed here have shown, funding support for such programs has been forthcoming from the state level.

For all their ubiquity, and the fact that they constitute a form of vocationalism, the research into their operation is still fledgling. Our probe was, therefore, designed to shed light on these five programs in a way that would illuminate their premises and procedures and allow inferences to be drawn about the limits of a role for conventional vocational institutions and how such a role could affect vocational education policy and practice. We were particularly interested in the question of whether vocational institutions can claim comparative advantage in the workplace literacy enterprise. We seek in this final section to reflect upon what the cases—taken individually and collectively—have revealed. We also reflect generally upon the nature of workplace literacy programs.

Case 1—Hospital Project

The hospital project in which Redwood Technical College had the role of literacy provider enabled us to see a vocational institution assume such a role under the idealized conditions of a federal grant. The intent of the grant was that the approaches employed in the partnership would be of demonstration value to other entities embarking upon workplace literacy projects. Of course, Redwood's role would be especially instructive for other vocational institutions.

This project illustrated that vocational institutions (such as Redwood) with customized training services expertise and traditions can use these effectively in fashioning workplace literacy curricula. Such institutions know how to derive curricula from the workplace, and how to make workplace instruction relevant. They understand workplace culture intimately, and can communicate with employers about their needs and with workers about their jobs.

The project further revealed that beyond their known traditions and expertise, these institutions have a subtler claim as workplace literacy providers, which is that they may be preferred by adults (to providers such as high schools or ABE programs) because their context is postsecondary education which does not remind them of prior failure. Adult workers wish to be spared the stigma of having to go back to regular school.

This case also allowed us to see a vocational institution collaborate with unions. This is atypical, but it has become a needed competence for these institutions as they strive to carve a niche in the workplace literacy enterprise. Literacy is a controversial and political workplace issue. For a worker to admit to basic skill deficiencies is to become vulnerable. Working with unions is a way to minimize worker suspicion about the likely hidden agendas behind such initiatives and to win their confidence and cooperation. Redwood's ability to work collaboratively with union representatives and unionized workers was one of the major accomplishments of the hospital project—one which is of important demonstration value for other vocational institutions.

While vocational institutions typically offer some workplace basics as adjuncts to their technical courses (e.g., technical writing, welding math, and business English), such offerings do not ordinarily include the teaching of reading, except where institutions offer ABE classes. We saw in this case that the approach to reading was tentative, characterized by an attempt to teach generic reading strategies within the limiting confines of the functional context paradigm. We also saw an instructional approach that featured the teaching of strategies (e.g., picking up cues from surface features such as bold type) intended to help workers understand the importance of text they could not otherwise comprehend. Even if such strategies were to work, thereby aiding workers to perform jobs, our concern was that they would leave the underlying reading deficiency unattended.

It was our view that for a traditional vocational institution, the teaching of reading might constitute a major limit on their capability to deliver workplace literacy programs. Consistent with Perfetti (1989), we are of the view that reading is a generalized ability—that is, one that can manifest itself independent of specific domain knowledge. This basic skill, therefore, requires foundational deductive treatment that needs to be in place long before one reaches the age of entry into the workforce. Workplaces can provide a hook for the acquisition of general reading competence, but it is not meaningful to think of specific reading (e.g., "welding reading," "electronics reading") in isolation. The teaching of reading requires specially trained staff, along with a teaching culture that understands the nuances that attend its teaching. Finding ways to acquire capability here would be a challenge for those vocational institutions that are so inclined.

Case 2—A High-Tech Company

This case also featured a traditional vocational institution, North Oaks Technical College. It revealed that for such institutions wishing to offer workplace literacy programming, customized training services capability combined with ABE experience enhances their potency as providers. As with Redwood Technical College in the hospital project, North Oaks Technical College also had a viable customized training services function augmented by distance delivery capability. But, in addition, it also offered ABE courses as part of its regular fare. We believe that this ABE capability gave the college an important edge. Some staff were specially trained as ABE providers and, through the "developmental studies" program of the college, were routinely involved in providing remedial training in the three Rs to students in need. This staff could use their ABE experience as a backdrop for evaluating the skills of workers. Their expertise in teaching adults to read enabled them to diagnose deficiencies. They could provide both generic reading and also reading within a domain. But they understood that the latter was meaningless without the former. Thus, they could tell whether the deficiency a worker exhibited was foundational (e.g., deficiency in word attack) and not likely to be remedied within the context of the typical (short) workplace literacy class. They could so advise the worker and then offer remedial help on an individualized basis, without the pressure of time, in the context of ABE classes.

This case also provided a glimpse of the outlines of a model that would confine the role of a technical college in on-site workplace literacy programs to the literacy audit and to tutoring on an ad hoc basis. Curriculum development and instruction (major aspects of the current offerings of vocational institutions in workplace literacy programs) would be provided via canned individualized multimedia computer programs, aided by an in-house subject matter expert. Such a model, of course, is premised on the idea that, for the most part, the basic skills needed for the workplace could be decontextualized and packaged much like traditional school learning. Should this premise prove to be of merit, the case for vocational institutions as unique workplace literacy providers would have become that much more difficult to argue or demonstrate.

Cases 3 and 4—A Private Provider

Cases 3 and 4 introduced a private provider (the Workplace Education Center) which delivered basic skills training to hourly-paid workers at a branch of a large bank and at a popular chain of hotels. The basic approach to curriculum and instruction utilized by this provider did not differ materially from that utilized by the technical colleges in Cases 1 and 2. There was the literacy audit, in which the provider worked collaboratively with the employer and workers to decide on problems and priorities and to connect the curriculum with actual workplace materials; then, the content was decontextualized to a form that enabled instruction under school-like conditions. Included was the pre- and posttesting of workers.

This provider had learned the technology of the literacy audit and had shown, thereby, that traditional vocational institutions have no monopoly here. Thus, where the Education and Development Department of Pinewood Technology was experimenting with an approach that would limit the role of the vocational partner to the literacy audit and tutoring, now this private provider was illustrating that the literacy audit—a capability that is characteristic of vocational institutions—was not the sole province of such institutions. These institutions, thus, have to look deeper to find an explanation of their unique claims and, perhaps more to the point, they have to illustrate that they are better and more cost-effective than other providers in offering workplace literacy commonplaces.

An interesting feature of this case was the demeanor of the provider toward workers. We saw here a concern for worker autonomy (called "empowerment" by WEC staff), expressed in terms of encouragement to seek out further educational experiences that could lead to advancement in the job. There was empathy for the worker. As we have pointed out in discussing the hospital case, ideological stances of this order had been a source of tension in the workplace literacy project described by Gowen (1992). Ideological stances, of course, influence curriculum and instruction. If the goal is worker autonomy and eventual progression up the occupational ladder, then the efficacy of the functional context model is thereby called into question.

Traditionally, vocational education institutions have prepared workers to the specifications of employers or jobs. They are driven by labor market requirements. Their natural tendency, therefore, is to approach workplace literacy from the employer's point of view. For them, the curriculum is a technical matter, not the subject of ideological debate. Here we can appreciate the private provider better, and we see another area that constitutes a potential limit for vocational education institutions. Can they come to view literacy in terms that transcend work—that is, from the point of view of the worker?

In Case 4, WEC demonstrated capability to communicate with workers for whom English was not their native language. Having instructors who could communicate in Spanish, and who were also sympathetic to the peculiar difficulties that lack of facility with English caused these workers, was a clear asset for the provider—one which appeared to set them apart from other providers, traditional vocational education institutions included. Here again, there appeared to be a limit, or at least a challenge, besetting vocational institutions which proposed to become involved in workplace literacy programming and which claimed uniqueness and comparative advantage.

Case 5—A Nontraditional Vocational Institution

This case was an examination of the operations of the Twin Cities Opportunities Industrialization Center (TCOIC), a community-based, nontraditional vocational institution—an enterprise which we believe has much to teach vocational policymakers at the local, state, and federal levels, and also to traditional vocational institutions, regarding an approach to the education and training of marginalized populations. TCOIC kept a close connection between the technical and basic skills that employers wanted. But perhaps what makes this institution unique among vocational institutions was that it *specializes* in the very clientele who are deemed most likely to be lacking basic skills in the workforce. That its operations are located within the community it predominantly serves speaks to its customer-orientation and its legitimacy. This orientation is further illustrated by the one-stop shop approach that is built into the basic design of the institution, a design that closely connects literacy with vocationalism, featuring literacy testing services, translation services for immigrants, public school classes for those seeking a high school diploma, literacy labs for those with such deficiencies, vocational labs to provide technical skills, and counseling and placement services. These services combine with multiple entrance and exit points and self-pacing.

While we do not wish to draw blind inference from this single case, it may be that one lesson it teaches is that a vocational school can be a powerful purveyor of adult literacy, if it is prepared to be flexible in its approach to programming and to forge ties with, or draw upon, the resources and expertise that reside in the community, including agencies (e.g., public schools) that specialize in complementary services (e.g., ABE and ESL programming). This case also illustrates that within their local communities may lie solutions to the basic skills difficulties of marginalized groups.

Summary/Reflections

Taken together, the cases unearth some critical features which, if present, seemed to strengthen the case for a vocational institution claiming uniqueness or comparative advantage over other providers in the workplace literacy enterprise. Among these features were

1. a tradition of working collaboratively with industry to determine its training needs and deriving curriculum therefrom.
2. a customized training focus.
3. distance education capability that would allow the delivery of programming directly to workplaces from campus sites.
4. capability to deal with racial and ethnic minorities.
5. capability of dealing with immigrant non-English speaking populations.
6. ABE capability, including ability to diagnose basic skill deficiencies and to distinguish between functional needs and generic needs.

7. a tradition of integrating basic skills with technical skills training—that is, of teaching basic skills in the functional context of technical skills.

8. flexible scheduling to allow for self-paced learning and a willingness to give students the time they need to complete programs.

9. ability to work collaboratively with labor representatives.

Table 6 (Appendix C) provides a summary of the cases, with an emphasis upon key variables.

Reflection on Workplace Literacy

It was striking that, among the four workplaces we examined, whatever may have been the stated problem—whether new legislation, new technology, a focus on quality, a move toward multiskilling, or a desire to make workers more promotable in a high-tech manufacturing company, among hospital food and laundry workers, in a bank, or for immigrants who knew little English—the solutions were remarkably similar—short courses in basic reading, math, and written or oral communication. To be sure, problem solving, working with others, and so on were implemented. But at the core, the solution to literacy deficiencies was basically the three Rs.

This predictability—if this is the case elsewhere across the workplace literacy enterprise—raises questions about the premises of that enterprise. Not the least of these questions is whether the focus on workplaces is not ill-considered, whether it does not obscure a larger, deeper problem—the problem of adult illiteracy. Developed countries such as the United States have traditionally been reluctant to concede to having an adult illiteracy problem. Illiteracy has been viewed as a preserve of the Third World, where it has been viewed as a barrier to full political expression and freedom. A discussion of illiteracy in the developed world reduces the distance between these worlds. In the United States, for example, a discussion of illiteracy leads to consideration of its social correlates, leading to challenges of core ideas such as that of equality of opportunity for all.

Considering the circumstances, it is appealing to particularize the problem of illiteracy by framing it within the context of work. The frame is shifted from the social and political to the economic. It is not so much that society and schools have failed as it is that workplaces must now face new global economic realities (e.g., Bhola, 1988; Jones, 1990; Limage, 1990). But if workplace literacy emerges as essentially no different from school or fundamental literacy (and our evidence does not suggest otherwise), then it may well be that this enterprise toils in vain and is in need of reappraisal.

A reappraisal of the problem of workplace literacy, and the attendant discourse, may begin with consideration of the definition of workplace literacy. That the definition of workplace literacy is problematic follows from the fact that the definition of literacy itself is problematic, as literacy is a social construct (e.g., Graff, 1991; Scribner & Cole, 1981; Venezky, Wagner, & Cilberti, 1990).

What really is workplace literacy? Issues here were examined earlier within the context of our conceptual framework, when we pointed out that workers and their representatives may have different conceptions of workplace literacy than corporate managers. Some see the issue in Freirean terms, viewing workplace literacy in terms of critical consciousness—of voice.

But the dominant conception of workplace literacy has been one that conceives of jobs in functional, reductionist terms, subject to discrete analysis. Functional context theory has been the dominant explanation of the nature of jobs. This theory has driven the technology of workplace literacy, the centerpiece of which is the literacy audit. The workplace literacy curriculum emanates from the literacy audit.

We agree with Kalman and Fraser (1992) and Gowen (1992) that the assumptions and premises here might be faulty. The literacy audit has much face validity because it pays attention to actual workplace examples (e.g., forms, memos, manuals, menus, notices, and math problems). But the tests used in these audits (and in the four workplace-based projects we saw) to assess worker deficiencies (e.g., the ABLE, TABE, or Foreign Service Institute interviews) are standardized and are focused on generic and not workplace-specific competencies. They are not tests of workplace literacy at all—except, of course, that by workplace literacy is meant school or basic literacy. We see a disconnection here between the problem, the diagnosis, and the remedy. Our sense is that when such tests are used in the workplace, they are invalid if the purpose is other than what they are designed to measure.

In the workplace-based cases we have examined, actual problems and examples from the workplace did substantially inform the curriculum and the approach to instruction. This workplace focus was good pedagogy. But the more practical purpose was to narrow the scope of what was to be taught, a practical strategy given that such programs always operate under rigid time constraints. For example, if it were known that the worker had to read a particular menu, or fill a particular form, or convert numeric dollar amounts to words, then those particular skills were taught. But a worker who has difficulty reading a menu would also have difficulty reading a story to her children. Thus, the focus on workplace examples, while good pedagogy, was no guarantee that the underlying problem would be resolved.

We saw no direct parallel between instruction that particular workers needed and tasks they could not perform. The unit of analysis in workplace literacy audits was the group rather than the individual. There was no connecting of remedy to problem.

If, as is our view, workplaces merely help us to observe the manifestations of basic literacy deficiencies in the workforce and in the adult population at large (e.g., Kirsch, Jungeblut, Jenkins, & Kolstad, 1993), then to rely on workplaces themselves to solve the problem might be misguided policy. The problem might better (more accurately) be framed not in terms of workplace literacy, but in terms of adult illiteracy (e.g., Benton & Noyelle, 1992). Workplaces were not invented to purvey basic literacy. They cannot do so efficiently. They were meant to use literacy to good effect to produce goods and services. When called upon to address the problem of literacy, they resort to the only mode they know—which is the training mode—where problems can be addressed quickly, in a matter of days, and in ways that do not disrupt the rhythm of production. But basic literacy demands more in terms of expertise, strategy, and time. Vocational institutions may yet have a role to play here, on the basis of their tradition of working with adult learners. TCOIC showed such a tradition, as did North Oaks Technical College, with their ABE capability.

On the Role of Vocational Institutions

The cases we have examined here prompt the view that in the extent that workplace literacy programs hold to the basic technology of literacy audits leading to decontextualized curricula and instruction under school-like conditions, vocational institutions have no particular claim to that enterprise. We have seen that even without the infrastructural support that a vocational institution embodies, a private provider has been able to master this technology and to offer itself as credible to companies, as well as state and federal authorities. Furthermore, as computer-assisted literacy instruction becomes more commonplace in companies, the importance of vocational institutions in the workplace literacy enterprise, at least in on-site programs, would seem to diminish. What these observations suggest is that vocational institutions must find a rationale for a role that transcends the basic workplace literacy technology, and they must illustrate that they are more cost-effective than other providers in offering workplace literacy programs.

What is the case, if any, for a unique role for vocational institutions in the workplace literacy enterprise? We are of the opinion that there is such a case to be made, premised on these institutions holding to their tradition of teaching basic skills in close relationship to technical skills (e.g., welding math and business English), whether under the conditions of customized training, ABE, or in their regular programming. When these institutions hold basic literacy and work in close proximity, they play to their strengths. They must, therefore, not divorce workplace literacy training from technical skills training. When they assume the role of basic skills provider outside of a practical context, they forfeit those strengths and any claims to uniqueness or comparative advantage. In order to be unique and cost-effective and to show comparative advantage, they must accentuate their strengths, which feature hands-on applied learning accompanied by considerable opportunity for success.

BIBLIOGRAPHY

Alexander, J. (1988). Developing a meaningful vocabulary. In J. Alexander (Ed.), *Teaching reading* (pp. 128-155). Glenview, IL: Scott, Foresman, and Company.

American Vocational Association. (1990). *The AVA guide to the Carl D. Perkins Vocational and Applied Technology Education Act of 1990.* Alexandria, VA: Author.

Bailey, T. (1989). *Changes in the nature and structure of work: Implications for skill requirements and skill formation* (Technical Paper #9). New York: National Center on Education and Employment, Teachers College, Columbia University.

Bailey, T. (1991). Jobs of the future and the education they will require: Evidence from occupational forecasts. *Educational Researcher, 20*(2), 11-20.

Bailey, T., & Noyelle, T. (1988). *New technology and skill formation: Issues and hypotheses* (Technical Paper #1). New York: National Center on Education and Employment, Teachers College, Columbia University.

Barrick, R. K., & Buck, L. L. (1987). They're trained but are they employable? *Vocational Education Journal, 62*(5), 29-31.

Barton, P. E., & Kirsch, I. S. (1990, July). *Policy perspectives: Workplace competencies: The need to improve literacy and employment readiness.* Washington, DC: U.S. Department of Education, Office of Educational Research and Improvement.

Benton, L., Bailey, T. R., Noyelle, T., & Stanback, T. M., Jr. (1991). *Employee training and U.S. competitiveness: Lessons for the 1990s.* Boulder, CO: Westview Press.

Benton, L., & Noyelle, T. (1992). *Adult illiteracy and economic performance.* Paris, France: Centre for Educational Research and Innovation of the Organization for Economic Cooperation and Development.

Berg, I. (1970). *Education and jobs*. New York: Praeger.

Berryman, S. E. (1988). *Education and the economy: A diagnostic review and implications for the federal role*. Paper prepared for the July 1988 Seminar on the Federal Role in Education, The Aspen Institute, Aspen, CO.

Bhola, H. S. (1988). The politics of adult literacy promotion: An international perspective. *Journal of Reading, 31*(7), 667-671.

Breeden, K. H., & Bowen, J. S. (1990). Building literate communities: Georgia's blueprint for success. *Vocational Education Journal, 65*(6), 24-25, 81.

Busse, R. (1992). The new basics: Today's employers want the "three Rs" and so much more. *Vocational Education Journal, 67*(5), 24-25.

Carnevale, A. P. (1991). *America and the new economy*. Alexandria, VA: American Society for Training and Development.

Carnevale, A. P., Gainer, L. J., & Meltzer, A. S. (1988). *Workplace basics: The skills employers want*. Washington, DC: U.S. Department of Labor and the American Society for Training and Development.

Carnevale, A. P., Gainer, L. J., Villet, J., & Holland, S. L. (1990). *Training partnerships: Linking employers and providers*. Washington, DC, and Alexandria, VA: U.S. Department of Labor and American Society for Training and Development.

Carrol, J. (1963). A model of school learning. *Teachers College Record, 64*(8), 723-733.

Chisman, F. P. (1989). *Jump start: The federal role in adult literacy*. Southport, CT: The Southport Institute for Policy Analysis.

Chisman, F. P., & Campbell, W. L. (1990). Narrowing the job-skills gap: A focus on workforce literacy. In F. P. Chisman & Associates (Eds.), *Leadership for literacy: The agenda for the 1990s* (pp. 144-170). San Francisco: Jossey-Bass.

Ciancio, J. (1988). Literacy: The basic skill. *Vocational Education Journal, 63*(2), 41-42.

Commission on Skills of the American Workforce. (1990). *America's choice: High skills or low wages!* Rochester, NY: National Center on Education and the Economy, Teachers College, Columbia University.

Conrath, J., Jones, D., Larsen, C., Locsin, T., Lynch, M., Mrowicki, L., & Schnell, L. (1991). *A basic skills core curriculum for the manufacturing industry.* Des Plaines, IL: The Center Resources for Education.

Copa, G. H., Plihal, J., Scholl, S., Ernst, L., Rehm, M., & Copa, P. M. (1985). *An untold story: Purposes of vocational education in secondary schools.* St. Paul: Minnesota Research and Development Center, University of Minnesota.

Cornell, T. (1988). Characteristics of effective occupational literacy programs. *Journal of Reading, 31*(7), 654-656.

Davis, B. (1988). Time out for reading and math. *Vocational Education Journal, 63*(2), 38-40.

Dees, A. (1990). Basic skills go high tech. *Vocational Education Journal, 65*(1), 30-32.

Diehl, W. A., & Mikulecky, L. (1980). The nature of reading at work. *Journal of Reading, 24*(3), 221-227.

Durkin, D. (1983). *Teaching them to read* (4th ed.). Boston: Allyn and Bacon.

Eurich, N. P. (1985). *Corporate classrooms: The learning business: A report on education in American business and industry.* Princeton, NJ: Carnegie Foundation for the Advancement of Teaching.

Feller, R., & Daly, J. (1992). Counselors tackle the new basics. *Vocational Education Journal, 67*(2), 24-25, 55.

Form, W. (1987). On the degradation of skills. *American Review of Sociology, 13*, 29-47.

Fowler, R. (1992). How to build a successful program in the workplace: A business perspective. *Adult Learning, 3*(8), 17-18.

Freire, P., & Macedo, D. (1987). *Literacy: Reading the world and the word.* South Hadley, MA: Bergin & Garvey.

Gee, J. P. (1988). What is literacy? *Journal of Education, 171*(1), 18-25.

Gordon, E. E., Ponticell, J. A., & Morgan, R. R. (1991). *Closing the literacy gap in American business.* New York: Quorum.

Gowen, S. G. (1992). *The politics of workplace literacy: A case study.* New York: Teachers College Press, Columbia University.

Graff, H. J. (1991). The literacy myth: *Cultural integration and social structure in the nineteenth century.* New Brunswick, Canada: Transaction Publishers.

Gray, K. (1991). Vocational education in high school: A modern phoenix? *Phi Delta KAPPAN, 72*(6), 437-445.

Greene, M. (1991). Going beyond the functional: The literacy debate and the public school. *Educational Horizons, 69*(3), 129-134, 164-168.

Grubb, W. N., Davis, G., Lum, J., Plihal, J., & Morgaine, C. (1991, July). *"The cunning hand, The cultured mind": Models for integrating vocational and academic education* (MDS-141). Berkeley: National Center for Research in Vocational Education, University of California at Berkeley.

Grubb, W. N., Dickinson, T., Giordano, L., & Kaplan, G. (1992, December). *Betwixt and between: Education, skills, and employment in sub-baccalaureate labor markets* (MDS-470). Berkeley: National Center for Research in Vocational Education, University of California at Berkeley.

Hadlock, P., Hecker, D., & Gannon, J. (1991). High technology employment: Another view. *Monthly Labor Review, 114*(7), 26-30.

Housel, D. J. (1991). This program produces pride and business skills. *Vocational Education Journal, 66*(8), 28-29.

Hull, G. (1991). *Hearing other voices: A critical assessment of popular views on literacy and work* (MDS-154). Berkeley: National Center for Research in Vocational Education, University of California at Berkeley.

Hull, G. (1992). *"Their chances? Slim and none." An ethnographic account of the experiences of low-income people of color in a vocational program and at work* (MDS-155). Berkeley: National Center for Research in Vocational Education, University of California at Berkeley.

Hull, G. (1993). Hearing other voices: A critical assessment of popular views on literacy and work. *Harvard Educational Review, 63*(1), 20-49.

Jennings, J. F. (1991). Congressional intent. *Vocational Education Journal, 66*(2), 18-19.

Jones, P. W. (1990). UNESCO and the politics of global literacy. *Comparative Education Review, 34*(1), 41-60.

Jones, J., Locsin, T., Lynch, M., Mrowicki, L., & Olivi, L. (1993). *Best practices for quality basic skills programs in the manufacturing industry*. Des Plaines, IL: The Center Resources for Education.

Kakela, J. (1993). The vocational interactive reading project: Working with content area specialists. *Journal of Reading, 36*(5), 390-396.

Kalman, J., & Fraser, K. (1992). *Opportunities lost and lessons learned: Inside a workplace literacy program* (MDS-252). Berkeley: National Center for Research in Vocational Education, University of California at Berkeley.

Kazemek, F. E. (1991). "In ignorance to view a small portion and think that all": The false promise of job literacy. *Journal of Education, 173*(1), 51-64.

Keeley, M. (1990). Literacy at work: Matching instruction to the job. *Vocational Education Journal, 65*(6), 28-29.

Kidder, K. L. (1991). How to help students survive classes in English. *Vocational Education Journal, 66*(8), 26-27.

Kirsch, I. S., Jungeblut, A., Jenkins, L., & Kolstad, A. (1993). *Adult literacy in America*. Washington, DC: U.S. Department of Education.

Knell, S. (1990). Workplace literacy. What it is—and what voc ed can do about it. *Vocational Education Journal, 65*(6), 22-23, 79.

Kutner, M. A., Sherman, R. Z., Webb, L., & Fisher, C. J. (1991). *A review of the National Workplace Literacy Program*. Washington, DC: U.S. Department of Education, Office of Planning, Budget, and Evaluation.

Lee, C. (1988). Basic training in the corporate schoolhouse. *Training, 25*(4), 27-36.

Lewis, T. (1991). Difficulties attending the new vocationalism in the USA. *Journal of Philosophy of Education, 25*(1), 95-108.

Limage, L. (1990). Adult literacy and basic education in Europe and North America: From recognition to provision. *Comparative Education, 26*(1), 125-140.

Martinez, R., & Badeaux, A. (1992). Sparking interest in academics. *Vocational Education Journal, 67*(8), 34-35, 71.

McCullough, C. (1945). Recognition of context clues in reading. *Elementary English Review, 22*(1), 1-5.

McIlvoy, N. D. (1989). Literacy is hot! *Vocational Education Journal, 64*(3), 20-23.

McKeown, M. (1985). The acquisition of word meanings from context by children of high and low ability. *Reading Research Quarterly, 20*(4), 482-496.

Merex Corporation. (1991). *Closing the skills gap: Impact of a workplace literacy program.* (ERIC Document Reproduction Service No. ED 352 488)

Mikulecky, L., Henard, D., & Lloyd, P. (1992). *A guidebook for developing workplace literacy programs.* Indianapolis: Office of Workforce Development, Indiana Government Center.

Mikulecky, L., & Lloyd, P. (1992, July). *Evaluating the impact of workplace literacy programs: Results and instruments from the NCAL Workplace Literacy Impact Project.* Philadelphia: National Center on Adult Literacy, University of Pennsylvania.

National Commission on Secondary Vocational Education. (1984). *The unfinished agenda: The role of vocational education in the high school.* Columbus: National Center for Research in Vocational Education, Ohio State University.

Oakes, J. (1985). *Keeping track: How schools structure inequality.* New Haven, CT: Yale University Press.

Park, R., Olson, R., & Oldham, N. (1991). *Reading for workplace success: General business.* Eden Prairie, MN: Paradigm Publishing International.

Park, R., Storlie, R. L., & Dawis, R. V. (1988). *The educational needs of dislocated workers in Minnesota.* Minneapolis: Center for Urban and Regional Affairs, University of Minnesota.

Park, R. J. (1990, January). *Developing workplace literacy programs.* St. Paul: Extension and Customized Training Services, Minnesota State Board of Vocational Technical Education.

Park, R. J. (1992). Workplace literacy. In A. M. Scales & J. E. Burley (Eds.), *Perspectives: From adult literacy to continuing education* (pp. 132-143). Dubuque, IA: Wm. C. Brown.

Parnell, D. (1985). *The neglected majority.* Washington, DC: Community College Press.

Perfetti, C. A. (1989). There are generalized abilities and one of them is reading. In L. B. Resnick (Ed.), *Knowing, learning, and instruction: Essays in honor of Robert Glaser.* Hillsdale, NJ: Lawrence Erlbaum.

Phillipi, J. W. (1988). Matching literacy to job training: Some applications from military programs. *Journal of Reading, 31*(7), 658-665.

Pritz, S. G. (1988). Basic skills: The new imperative. *Vocational Education Journal, 63*(2), 24-26.

Resnick, L. B. (1987). Learning in school and out. *Educational Researcher, 16*(9), 13-20.

Resnick, L. B. (1990). Literacy in school and out. *Daedalus, 19*(2), 169-185.

Rosenstock, L. (1991). The walls come down: The overdue reunification of vocational and academic education. *Phi Delta KAPPAN, 72*(6), 434-436.

Rumberger, R. (1981). The changing skill requirements of jobs in the U.S. economy. *Industrial and Labor Relations Review, 34*(4), 578-590.

Ryan, G. (1993). *Secretary of State workplace literacy grant program: Request for proposal.* Springfield, IL: Office of the Secretary of State.

Sarmiento, A., & Kay, A. (1990). *Worker-centered learning: A union guide to workplace literacy*. Washington, DC: AFL-CIO Human Resources Development Institute. (ERIC Document Reproduction Service No. ED 338 863)

Schultz, K. (1992). *Training for basic skills or educating workers?: Changing conceptions of workplace education programs* (MDS-255). Berkeley: National Center for Research in Vocational Education, University of California at Berkeley.

Scribner, S., & Cole, M. (1981). *The psychology of literacy*. Cambridge, MA: Harvard University Press.

Seamon, J., & Newcomb, S. (1990). Partners in literacy. *Vocational Education Journal, 65*(6), 32-33.

Secretary's Commission on Achieving Necessary Skills (SCANS). (1991). *What work requires of schools: A SCANS report for America 2000*. Washington, DC: U.S. Department of Labor.

Singer, H., & Donlan, D. (1989). *Reading and learning from text*. Hillsdale, NJ: Lawrence Erlbaum.

Spenner, K. L. (1985). The upgrading and downgrading of occupations: Issues, evidence, and implications for education. *Review of Educational Research, 55*(2), 125-154.

Spikes, W. F., III. (1990, October 31). *Training in the twenty-first century: Where do we go from here?* Paper presented at the annual meeting of the American Association for Adult and Continuing Education, Salt Lake City. (ERIC Document Reproduction Service No. ED 328 673)

Stanovich, K. (1980). Toward an interactive-compensatory model of individual differences in the development of reading fluency. *Reading Research Quarterly, 16*(1), 32-71.

Stasz, C., Ramsey, K., Eden, R., DaVanzo, J., Farris, H., & Lewis, M. (1993). *Classrooms that work: Teaching generic skills in academic and vocational settings* (MDS-263). Santa Monica and Berkeley: RAND, for the National Center for Research in Vocational Education, University of California at Berkeley.

Sternberg, R., Powell, J., & Kaye, D. (1983). Teaching vocabulary-building skills: A contextual approach. In A. C. Wilkinson (Ed.), *Classroom computers and cognitive science* (pp. 121-144). New York: Academic Press.

Sticht, T. G. (1978). *Literacy and vocational competence* (Occasional Paper No. 39). Columbus: National Center for Research in Vocational Education, Ohio State University.

Sticht, T. G. (1988). Adult literacy education. In E. Z. Rothkopf (Ed.), *Review of research in education 15, 1988-1989* (pp. 59-96). Washington, DC: American Educational Research Association.

Sticht, T. G., Armstrong, W. B., Hickey, D. T., & Caylor, J. S. (1987). *Cast-off youth: Policy and training methods from the military experience*. New York: Praeger.

Sticht, T. G., & Hickey, D. T. (1991). Functional context theory, literacy, and electronics training. In R. F. Dillon & J. W. Pellegrino (Eds.), *Instruction: Theoretical and applied perspectives* (pp. 82-106). New York: Praeger.

Sticht, T. G., & Mikulecky, L. (1984). *Job-related basic skills: Cases and conclusions*. Columbus: National Center for Research in Vocational Education, Ohio State University. (ERIC Document Reproduction Service No. ED 246 312)

Sullivan, L. H. (1969). *Build brother build*. Philadelphia: Macrae Smith Company.

Thurow, L. (1992). *Head to head: The coming economic battle among Japan, Europe, and America*. New York: William Morrow.

Tibbetts, J., Kutner, M., Hemphill, D., & Jones, E. (1991, July). *The delivery and content of training for adult education teachers and volunteer instructors.* Washington, DC: Pelavin Associates, Inc. for U.S. Department of Education.

U.S. Department of Education. (1992). *Workplace literacy: Reshaping the American workforce*. Washington, DC: Author.

U.S. General Accounting Office. (1990, May). *Training strategies: Preparing noncollege youth for employment in the U.S. and foreign countries* (GAO/HRD-90-88). Gaithersburg, MD: Author.

Vaughan, R. (1991). The new limits to growth: Economic transformation and vocational education. *Phi Delta KAPPAN, 72*(6), 446-449.

Venezky, R., Wagner, D., & Cilberti, B. (Eds.). (1990). *Towards defining literacy.* Newark, DE: International Reading Association.

Vogler, D. E., & Armistead, L. P. (1987). The importance of general education courses and competencies as viewed by community college occupational students. *Journal of Studies in Technical Careers*, *9*(3), 191-200.

Wallace, M. (1989). Brave new workplace: Technology and work in the new economy. *Work and Occupations*, *16*(4), 363-392.

Warnat, W. I. (1991). Preparing a world-class work force. *Vocational Education Journal*, *66*(5), 22-25.

Wirt, J., Muraskin, L., Meyer, R., & Goodwin, D. (1989). National assessment of vocational education: Testimony before the House Education and Labor Committee March 7, 1989. *Economics of Education Review*, *8*(4), 383-392.

Yin, R. K. (1994). *Case study research design and methods*. Thousand Oaks, CA: Sage.

APPENDIX A

Course Overview:
Reading on the Job: Hospital Project

COURSE OVERVIEW

Your challenge, as an instructor, is to create an atmosphere of trust and confidence for this course. Participants have very likely had negative experiences with learning in the past. They may be reluctant to "reveal" their deficiencies. You must work to convince trainees that "this" is the place to learn. Since the performance of each participant will be held in confidence, you must "draw the participants out" and discover where they need help in reading.

This course is designed to improve participant on-the-job reading skills by teaching a Problem Solving Method for approaching **any** reading task. The emphasis here is not in raising the "grade level reading score" of the trainee but rather on increasing his/her confidence level to seek out and understand the actual kinds of reading material encountered day-to-day on the job.

The course contains a variety of actual reading material taken from the jobs the participant performs. It includes reading material from several different jobs within the same general employment range. Some of the trainees will encounter material they have not seen on their specific job but which is part of a similar "level" of job at a typical hospital. One of the reasons for this approach is that many of these workers seek mobility among similar level jobs. Another reason is to provide participants with practice in reading what directly pertains to their jobs and reading that is somewhat different than what they have encountered before.

The course is arranged as a series of "reading vignettes." The examples given should be an occasion for soliciting examples of the participants' own particular reading difficulties. Ask them to bring examples from their jobs of specific reading materials that are difficult for them.

INSTRUCTIONAL GOAL

The training thrust of this course builds skills. The education portion develops self-confidence. One of your primary goals as an instructor should be establishing an atmosphere of learning which results in participants felling better about themselves as employees and as citizens of the community. You should strive to find ways to make your students better people on and off the job!

LEARNER OUTCOMES

When you complete this course, you will be able to:

- **SKILL #1: Use a good problem solving procedure before reading begins.**

- **SKILL #2: Show how to read in finding information.**

- **SKILL #3: Show how to read in following directions.**

- **SKILL #4: Show how to read in checking information.**

MASTERY

Mastery of these skills requires that you complete:

- All learning activities
- A Written Post-Check with a score of at least -- out of -- points (80%) correct.

INSTRUCTIONAL APPROACH

This course is designed to teach a simple Problem Solving approach which can be used with any reading situation. The course also provides the opportunity for the instructor to discover "each individual's reading strengths and weaknesses."

A series of short reading experiences make up this course. Examples of typical materials participants must read in the normal course of performing their jobs are presented. The materials are then "dissected" using the Problem Solving Checklist. Finally the trainees practice reading these job-related materials.

Emphasis on using the Problem Solving Checklist throughout the course is critical! The goal is not merely to teach understanding of the actual reading materials in the course, but more importantly to give participants a **simple method** for approaching any reading problem.

Since this is an "individualized" approach, the instructor must get to know which problems each participant experiences with these and other materials. Coaching should be provided to each individual through such personalizing techniques as:

- Setting up small groups to work on the exercises and circulating among groups
- Arranging peer tutor events
- Working one-on-one with those who need it

THIS CLASS WAS TAUGHT IN 10 HOURS.
THIS CLASS COULD BE TAUGHT IN 8 HOURS.

TEACHING TIPS

Each instructor has their own personal style and approach to creating a successful learning environment. Listed below are a few tips that worked well for teaching this class in the four Minneapolis, Minnesota hospitals:

1. Have each participant write their name on a stand up name tag (tent) to be placed in from of them at the place where they sit. The instructor should be able to read the names from wherever s/he is in the room. You may have to provide the cards for these "name tents." Participants should keep these tents with their learning modules and begin each session by placing their name tents out.

2. Try to break up the traditional room seating configuration with participants sitting in rows and the instructor in the front of the room. If possible, rearrange the chairs in to a U shape or some other workable pattern to "break the stereotype" of a traditional classroom.

3. Call on people by name instead of asking for a raised hands to get participation. The idea here is not to put people on the spot but to keep everybody alert and to encourage all to participate.

4. Pair some of the quicker learners with those who are struggling for some peer tutoring. This helps people get to know their fellow workers and take some pressure off those who have to work a little harder to master the material.

5. Arrange to spend some individual time with each participant while the others are working in groups. This gives attention to each person and helps you understand individual needs.

6. Occasionally have participants do some work on their own and discuss the results with the class. This may be a short overnight assignment on a half hour of individual work in class. This builds confidence and insures people are paying attention.

7. Find practical examples of teaching points from the class themselves or what they say.

8. Individual participants with special learning considerations require some different accommodations. Some examples: The instructor read the final exam out loud to a student with a reading disability; the hearing impaired students were given more time to understand the material; and signing interpreters we also used. The goal of the course is to get everyone to master the skills. Be creative to reach this goal.

9. Organize the sessions so the Written Post-Check can be corrected in class right after they complete it. They should get the results as soon as possible.

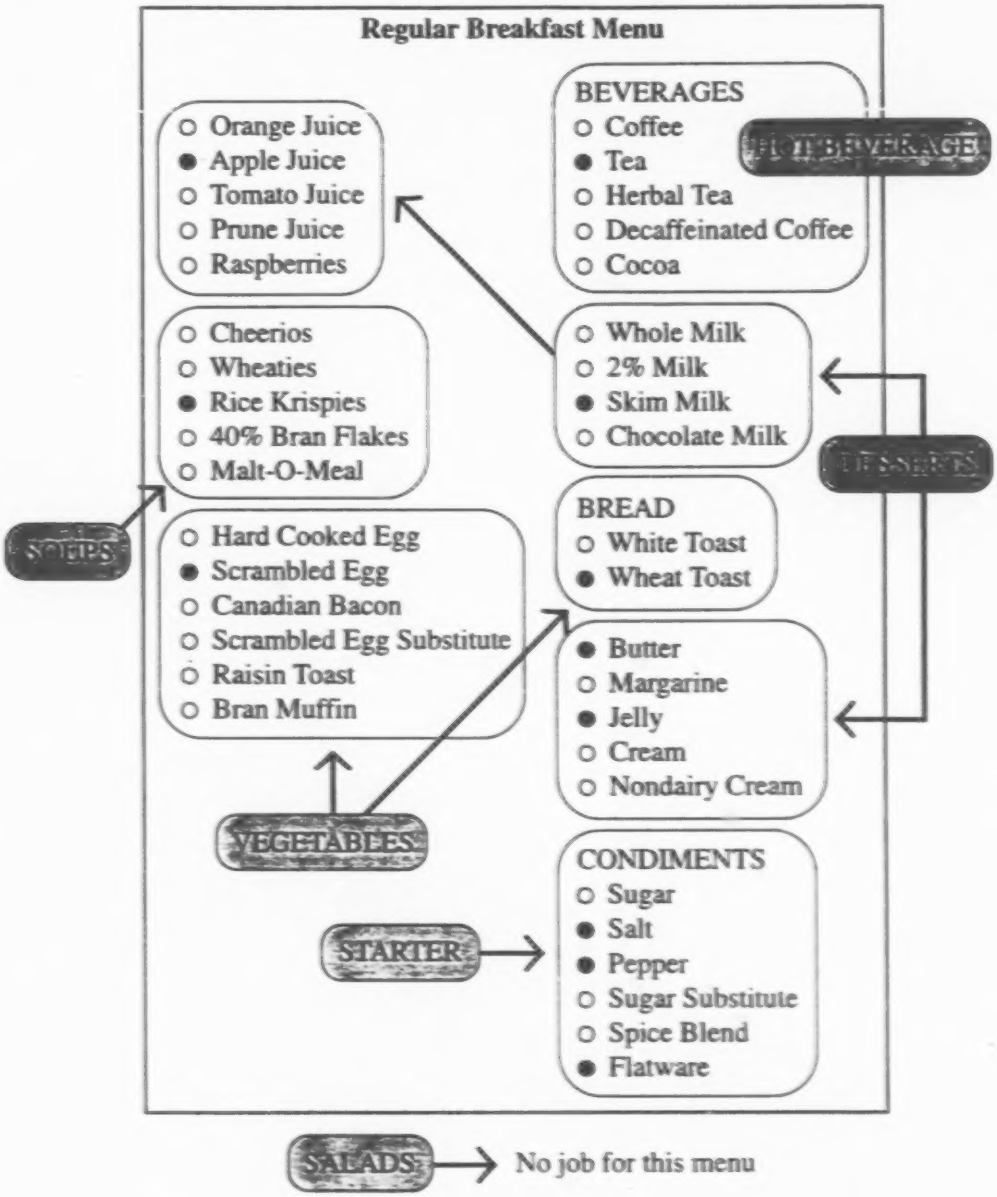
10. Send a personal letter to each trainee with their certificate explaining their strengths and areas were they need more work. This show people that you care and paid attention to them as individuals.

APPENDIX B

Practicing Menu Reading

Practicing Menu Reading

Directions: Use the menu below to answer the questions which follow.



Regular Breakfast Menu

○ Orange Juice
● Apple Juice
○ Tomato Juice
○ Prune Juice
○ Raspberries

○ Cheerios
○ Wheaties
● Rice Krispies
○ 40% Bran Flakes
○ Malt-O-Meal

○ Hard Cooked Egg
● Scrambled Egg
○ Canadian Bacon
○ Scrambled Egg Substitute
○ Raisin Toast
○ Bran Muffin

BEVERAGES
○ Coffee
● Tea
○ Herbal Tea
○ Decaffeinated Coffee
○ Cocoa

○ Whole Milk
○ 2% Milk
● Skim Milk
○ Chocolate Milk

BREAD
○ White Toast
● Wheat Toast

● Butter
○ Margarine
● Jelly
○ Cream
○ Nondairy Cream

CONDIMENTS
○ Sugar
● Salt
● Pepper
○ Sugar Substitute
○ Spice Blend
● Flatware

No job for this menu

Make sure you use the PROBLEM SOLVING CHECKLIST to answer these questions.

DEFINE > PLAN > READ > CHECK

Go on to the next page to practice reading this menu.

BEST COPY AVAILABLE

APPENDIX C

Tables 2, 3, 4, and 6

Table 2
Sample Content Items Needed for *Skills for Tomorrow* Courses—Hospital Project

Course Title	Sample Materials Needed
Working with Others	• Any in-house training programs for telephone/intercom etiquette • Sample telephone interactions from your department • Any written guidelines for how to talk to patients in rooms and during transport • Sample situations in your department where employees must work as part of a team • Sample work orders for day's work to use as part of time management practice • Sample situations in your department which cause stress
Reading on the Job	**Labels and Danger Signs:** • Sample blood bag labels and instructions/procedures for reading • Sample patient IDs and what the information means • Sample chemical bottle labels and what they mean • Sample food labels and what they mean • Copy of form to complete at end of training
	Charts and Forms: • Sample supply order slips and what they mean • Sample daily grill menu • Listing of basic food vocabulary and abbreviations with definitions • Sample situations where metric to U.S. conversion is required • Time cards with instructions on how to fill out • Sample of frequently used personnel forms such as requests for time off • Sample self-performance appraisals • Sample total quality charts and graphs with explanations
	Work Routines: • Instrument request forms with explanations • Written patient transport forms • Sample menus • Sample production sheets • Sample recipes • Sample plating sheets

Table 2 (continued)

Course Title	Sample Materials Needed
Measuring for Success	**Metric:** • Sample ratio calculation situations • Methods for measuring intake/outake of food (based on what is left on trays) • Sample situations requiring metric/U.S. conversions • Sample medication measurement situations • Sample mixing cleaning solution situations—changing proportions • Sample service requests for adding, diluting, and changing items in supply rooms
	Recipes: • Sample situations where a change of proportions is required • Sample situations where using proper serving utensils is required • Methods/situations for estimating when product will run out • Sample plating sheets • Sample situations for calculating correct food production amounts • Sample order-picking unit
	Temperature and Gauges: • Sample situations/methods for monitoring food temperatures • Situations for counting change back to customers • Sample diluting solutions situations

Table 2 (continued)

Course Title	Sample Materials Needed
Understanding Where You Work	• Diagrams/maps for how to find way around the hospital • Written material describing how your hospital is constructed from a business and a physical point of view • Description of basic parts/functions of your hospital • Basic medical terminology and abbreviation lists and their definitions • Any "mission statements" as well as any written "philosophical material" describing the focus of your hospital • Any organizational charts describing how each job fits into the big picture
Writing that Works	• Sample telephone message situations • Sample telephone messages for changes in food trays • Sample situations where employees are required to write simple memos • Sample incident report situations, blank forms, and actual completed forms • Sample blank and completed grievances and forms • Sample blank and completed shift logs and situations in which they are used • Sample blank and completed forms to bill time to other departments • Sample blank and completed forms to complete at end of training
Getting Computer Comfortable	• List of types and general location/purpose of computers in hospital • Identification of any training program or written material which describes the following topics about your hospital's computers: - powering up and down - numeric key pads - function keys - repeating keys - using diskettes and drives • Identification of what bar codes are used for in the hospital

Table 3
Results of Workplace Materials Audit—High-Tech Project

	Reading (Grade Levels)	Math		
Title	**Material Range**	**Appropriate Level**	**Material Range**	**Appropriate Level**
Manager	7-16	12	Calculator, decimals, accounting, gallons per square foot, algebra, specific gravity, basic math, volume square footage	10-PHS
Plant Engineering	12-16	12	Calculus, temperature, linear algebra scales	PHS
Administrative Support	8-12	10	Basic math graphs	7-9
Electrical	9-16	13	Formulas, linear algebra, basic math graphs	9-PHS
Systems	7-16	10	Formulas, linear algebra, basic math graphs	9-PHS
Fabrication Shop	10-12	10	Metric, decimals, calipers, charts, measurements, basic math, fractions, blueprints	7-10
Office Layout	8-12	10	Square foot, basic algebra, tape measure, blueprints	9-12
Training Coordinator/ WC Administrator	12-16	13	Basic math, graphs, percent, calculations, decimal, formulas	10-PHS
General Maintenance	7-9	9	Fractions, rules, basic math, square footage	8-10
Planners	8-13	10	Basic math, pricing, blueprints	9-PHS

Table 3 (continued)

	Reading (Grade Levels)		Math	
Title	**Material Range**	**Appropriate Level**	**Material Range**	**Appropriate Level**
Plumbing	10-16	12	Measurements, decimals, basic math, fractions	9-PHS
Water Systems	8-13	10	Volume, basic math, calculations, graphs, formulas, calculators	10-PHS
Mechanical Services	6-13	10	Basic math, formulas on the computer, use of calculator, addition, subtraction, decimals, fractions	8-10
HVAC	9-13	10	Linear algebra scales, temperatures	10-PHS
Grounds	8-10	9	Basic algebra, tape measure, square yard, blueprints	8-10
Facilities Services	8-10	9	Basic math, percents, decimals, fractions	7-9

Table 4

Analysis of Skills Pinewood Technology Employees Lack in Math

Skill	Average Number Having Difficulty			
	Division 1	Division 2	Division 3	Total
Reading and writing numerals	0	2	2	4
Factorization	9	8	3	20
Using 0 as an operator	3	8	2	13
•Interpretation of fractions	10	14	8	32
•Scientific notation	11	10	8	29
Ratio, •Proportion, •Percent	11	11	7	29
Computation				
whole numbers	4	6	4	14
addition	2	3	0	5
subtraction	5	5	2	12
multiplication	5	4	2	11
+division	6	5	5	16
Fractions				
•addition	12	9	7	28
•subtraction	11	12	8	31
•multiplication	13	14	9	36
•division	12	15	8	35
Decimals				
addition	3	1	0	4
subtraction	4	4	2	10
•multiplication	7	9	2	18
•division	11	13	7	31
•Algebraic equations	10	12	6	28
	12	12	9	33
•Integers	11	11	6	28
•Powers and roots	12	15	6	33

• Should be included in the math class
+ Review needed

Table 6
Synthesis of Cases

	Case Institution/Firm				
	1-Hospital	2-Pinewood	3-Bank	4-Hotel	5-TCOIC
Type	Service	Manufacture	Service	Service	N/A
Funding	Federal (National Workplace Literacy Program)	Company	State matching grant Bank	State matching grant Hotel	Mixed: Pell Grants Tuition State Corporate Local
Project Title	Skills for Tomorrow	Skills 2000	Nonexempt Education and Training (NEET)	N/A	N/A
Provider	2-yr. VoTech	2-yr. VoTech	Private provider	Private provider	Specially Accredited VoTech
Clientele	Median age 39 66% female 30% minority	<10% female <1% minority	Hourly paid	Spanish speaking women	Age: 22-44 85% minority Economically disadvantaged Immigrants Unemployed
Problem	Multiskilling Job performance	Quality focus Team communications Hazardous chemical—right to know	Job performance	LEP related Job performance Hotel layout	ESL Unemployed
Needs Assessment	Job shadowing Employer interview Employee interview Document analysis Standardized test (TABE)	Survey Employer interview Employee interview Document analysis Standardized test (ABLE) Readability analysis (Flesch)	Employer interview Employee interview Document analysis Standardized test (TABE)	Employer interview Employee interview Document analysis Standardized test Foreign Service Interview (FSI)	Standardized test (ABLE)

Table 6 (continued)

	Case Institution/Firm				
	1-Hospital	2-Pinewood	3-Bank	4-Hotel	5-TCOIC
Type	Service	Manufacture	Service	Service	N/A
Courses	Reading Writing Math Interpersonal skills Computer literacy System awareness	Math Reading Communications	Vital number skills Math refresher Reading/writing Problem solving	ESL: Reading/writing Listening/speaking Culture	Interpersonal skills Technical skills Reading Math
Course Length	10 hours (each)	19.5 hours (each)	36 hours total	36 hours total	Varies
Instructional Approach	Learning module Small group Peer tutoring Classroom	Small group Classroom	Small group Classroom Problem solving	Small group On-the-job Individual	Small group Self-paced Reading CAI Math CAI
Evaluation	Mastery test Worker reaction Supervisor reaction	Mastery test Standardized test Employee reaction Supervisor reaction	Mastery test Standardized test Employee reaction Employer reaction	Mastery test Standardized test Employee reaction Employer reaction	Job placement
Outcomes	Self-esteem Confidence	Self-esteem Math grade level gains	N/A	N/A	>52% placed